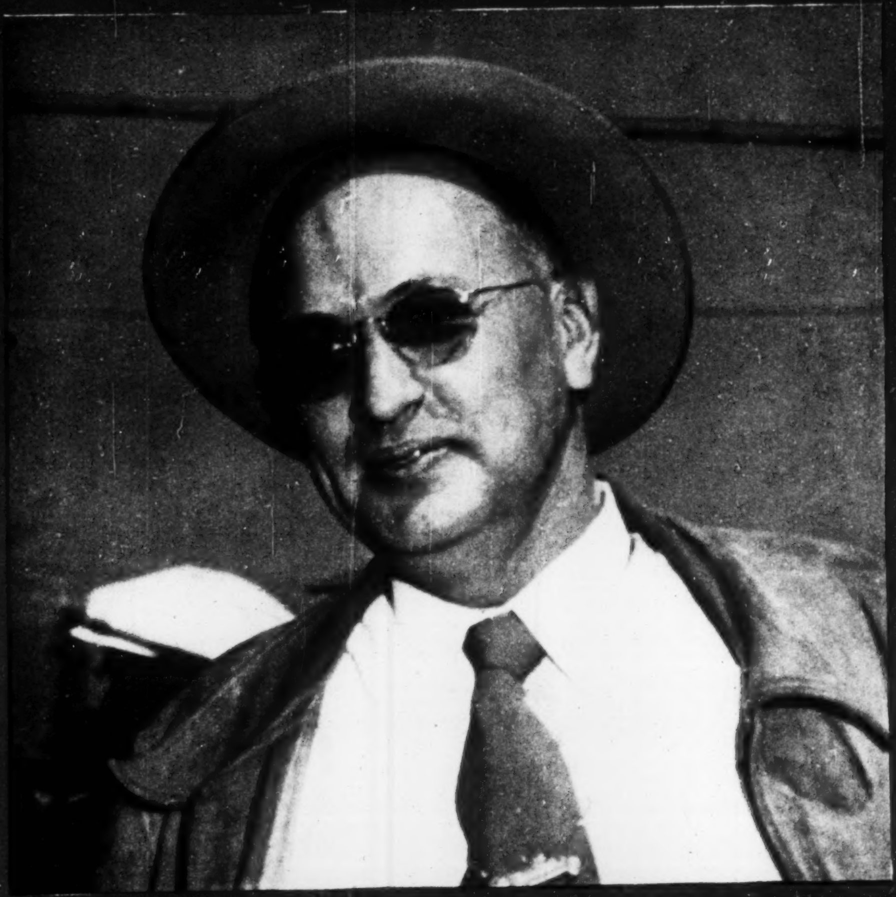
ENGINEERING
NEWS-RECORD
A McGRAW-HILL PUBLICATION

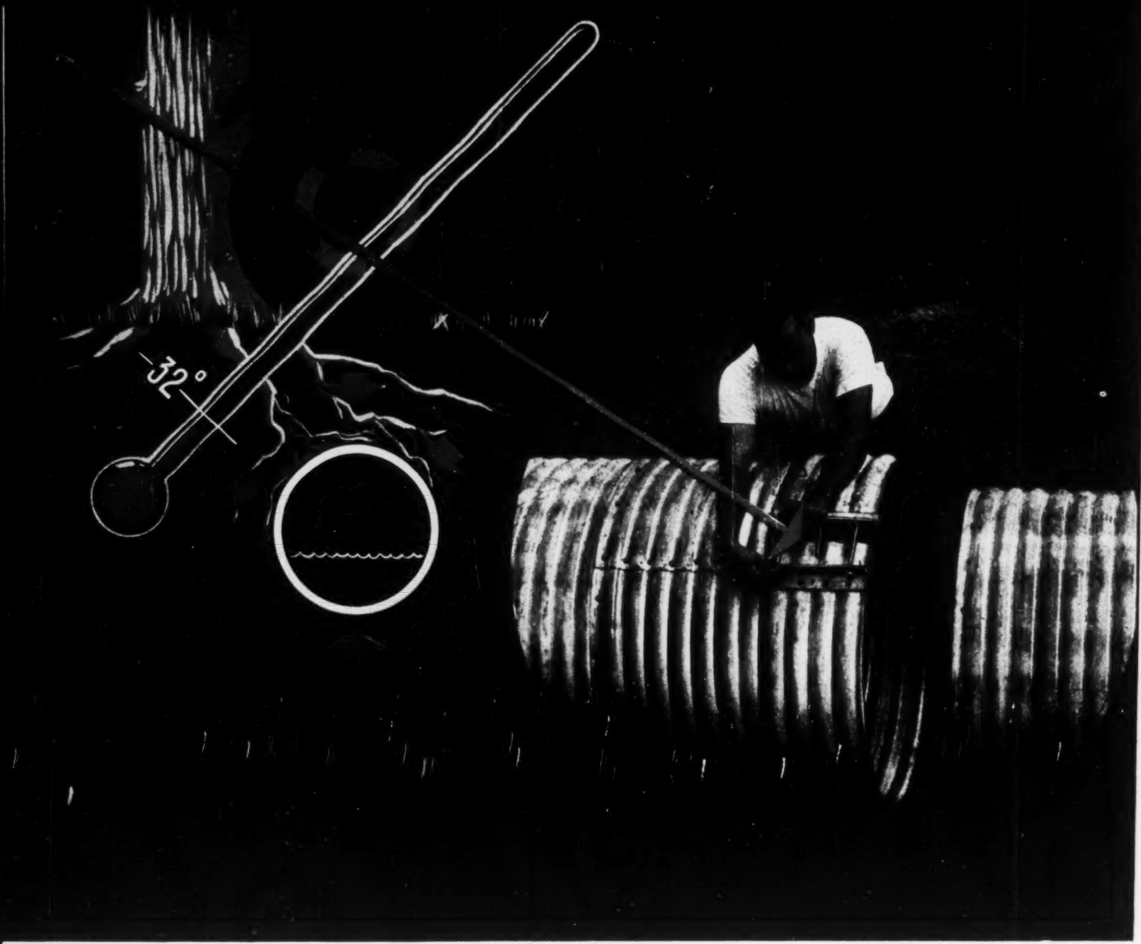
SEPTEMBER 15, 1949



Joseph L. Quinn—He leads biggest new stream pollution abatement drive (See p. 23)

• • •

1,800,000 CU. YD. OF ROCK FROM SINGLE QUARRY BLAST



This drainage pipe has good connections

Here's one drainage pipe that knows the right people. Long ago Armco engineers decided that nothing was going to push this pipe around.

They considered the impact and vibration of heavy traffic, shifting soils, frost action, unstable foundations and other hazards. Then Armco engineers carefully designed a connecting band that makes each joint as strong as the rest of the pipe. The result is a product that can be installed with complete confidence in its continuing efficiency as a conduit. No danger of mal-alignment. No open joints to invite tree roots or clogging from silt. Armco Corrugated Metal Pipe has proved ideal for sewers, culverts and similar drainage structures.

Providing better products to meet specific needs has been standard practice at Armco for more than 40 years. A few examples are FLEX-BEAM Guardrail, Spiral Welded Pipe, STEELOX Buildings, PIPE-ARCH and sturdy MULTI-PLATE Bridges.

Today you can bring your drainage and construction problems to Armco with full assurance you will receive all the benefits of long experience, extensive research facilities, and a real interest in helping you solve these problems.

Armco has a complete range of engineered products and convenient authoritative data to help you. If your problem is difficult or unusual why not talk it over with us?

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Tires still "young" at 3200 hours thanks to double bruise protection

THE BIG Rhude & Fryberger (Hibbing, Minn.) ore truck shown above weighs 90,000 lbs., loaded. Those B. F. Goodrich *Universal* tires have to carry loads like that out of iron ore pits and over haul roads in Minnesota's Mesabi range. In such service, sharp fragments of rock and iron ore can slash the dollars right out of tires! Tires are continually battered under their tons of load.

Yet, the tires in the picture are still "young" after 3200 hours of this service—apparently good for hundreds of hours more. Tread and sidewall rubber are still in good condition; cord bodies are still intact.

How can one make of tire stand up long in service that quickly kills off others? B. F. Goodrich off-road tires are built with a specially compounded *cut-resistant* tread rubber. And there is double bruise protection in the form of the BFG double nylon shock shield, built-in between the tread rubber and the body plies.

The double nylon shock shield consists of four layers of *nylon* cord between the tread and the body plies. Under load and under impact, the strong, elastic nylon *shields the rayon cord body.*

Only B.F.Goodrich gives you the added protection of the double nylon shock shield . . . the additional saving through (1) longer tire life, (2) increased number of recappable tires, (3) increased bruise resistance, (4) less danger of tread separation.

There's a specially designed BFG off-the-road Silvertown for every need. See your B. F. Goodrich dealer or write us direct. *The B. F. Goodrich Company, Akron, Ohio.*

Truck Tires BY

B. F. Goodrich

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Applier: A. O. Miller Waterproofing and Painting Co., Los Angeles

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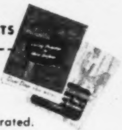

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ENGINEERING NEWS-RECORD

VOLUME 143 SEPTEMBER 15, 1949 NO. 11

WALDO G. BOWMAN
Editor

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MAKE YOUR KEY MACHINE
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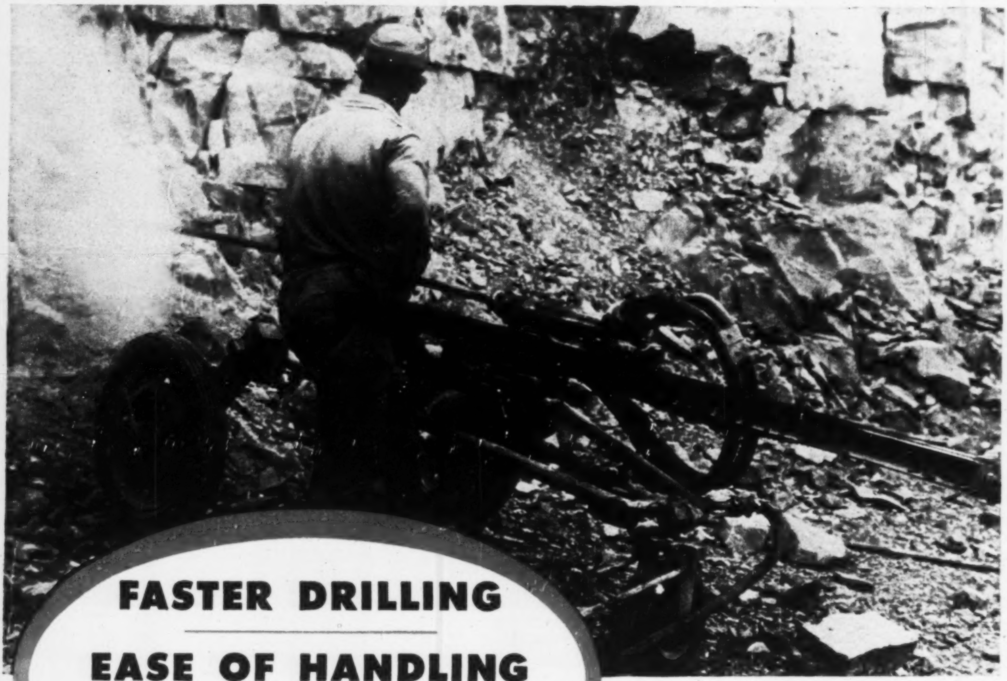

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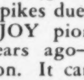
EASE OF HANDLING
LOW MAINTENANCE

Above, *drilling toe-holes—no need to stop drilling to blow. Piston speed and blow automatically adjusted to give fast, consistent and economical drilling in every kind of formation—especially in overburden, clay seams and other material that varies from hard to soft.*

You'll get *more hole* per shift, at lower costs, with the *exclusive* "drill and blow" feature of the JOY Lightweight Wagon Drill. And it's really lightweight—only 750 lbs.—easily operated by one man. Mounts JOY 55 or 65-pound sinkers, and 3" or 3½" drifters, as needed . . . requires no spikes due to the positive locked brakes. JOY pioneered the Lightweight eight years ago—more than 500 now in operation. It can save you time and money—*write for bulletin.*

Consult a Joy Engineer



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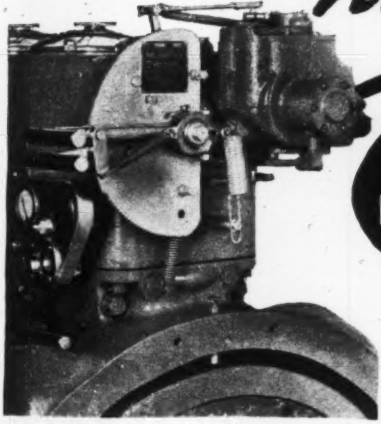
"MURPHY DIESELS *have eyes*"



the hydraulic servo-type governor provides instantaneous response to load changes!

The response of Murphy Diesels to load changes is so immediate that operators in the field have remarked "The Murphy Diesel has eyes!" The engine seems to foresee in advance demands for increased power.

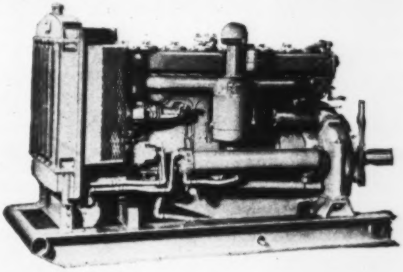
This instantaneous response is made possible by the hydraulic servo-type governor which harnesses lubricating oil pressure to adjust injector controls to meet changing power requirements. The governor flyweights serve merely as a control. By utilizing the powerful pressure of the lube oil the action of the governor is accurate and immediate throughout the speed range from idling to full speed. In the event lubricating oil pressure falls below a safe level the governor automatically shuts off the engine protecting it against possible damage.

The engine itself responds unfalteringly to the governor's control because it is a "true" diesel—solid fuel injected directly into a plain open combustion chamber. Murphy Unit Fuel Injectors, which eliminate all high pressure fuel lines, make possible smooth, precise injection.

Get full details from your Murphy Diesel Dealer. And be sure and ask him for a copy of the helpful bulletin, "*7 Questions to Ask a Diesel Engine Salesman*" or write to:

MURPHY DIESEL COMPANY
5311 West Burnham St., Milwaukee 14, Wisconsin

This Murphy Diesel powers a floating sand and gravel dredge.



Murphy Heavy-Duty "True" Diesel Engines and Power Units, 90 to 220 H.P. Generator Sets 60 to 133 K.W., A.C. or D.C.

MURPHY DIESEL

LOWEST ULTIMATE POWER COST

STOP

LOOK

HIT IT! *Marfak* won't splatter like ordinary grease — proof that heavy loads and rough roads won't hammer it out of spring shackles, tie rods and other chassis parts . . . that *Marfak* gives safer, longer-lasting protection with fewer applications.

LESSEN

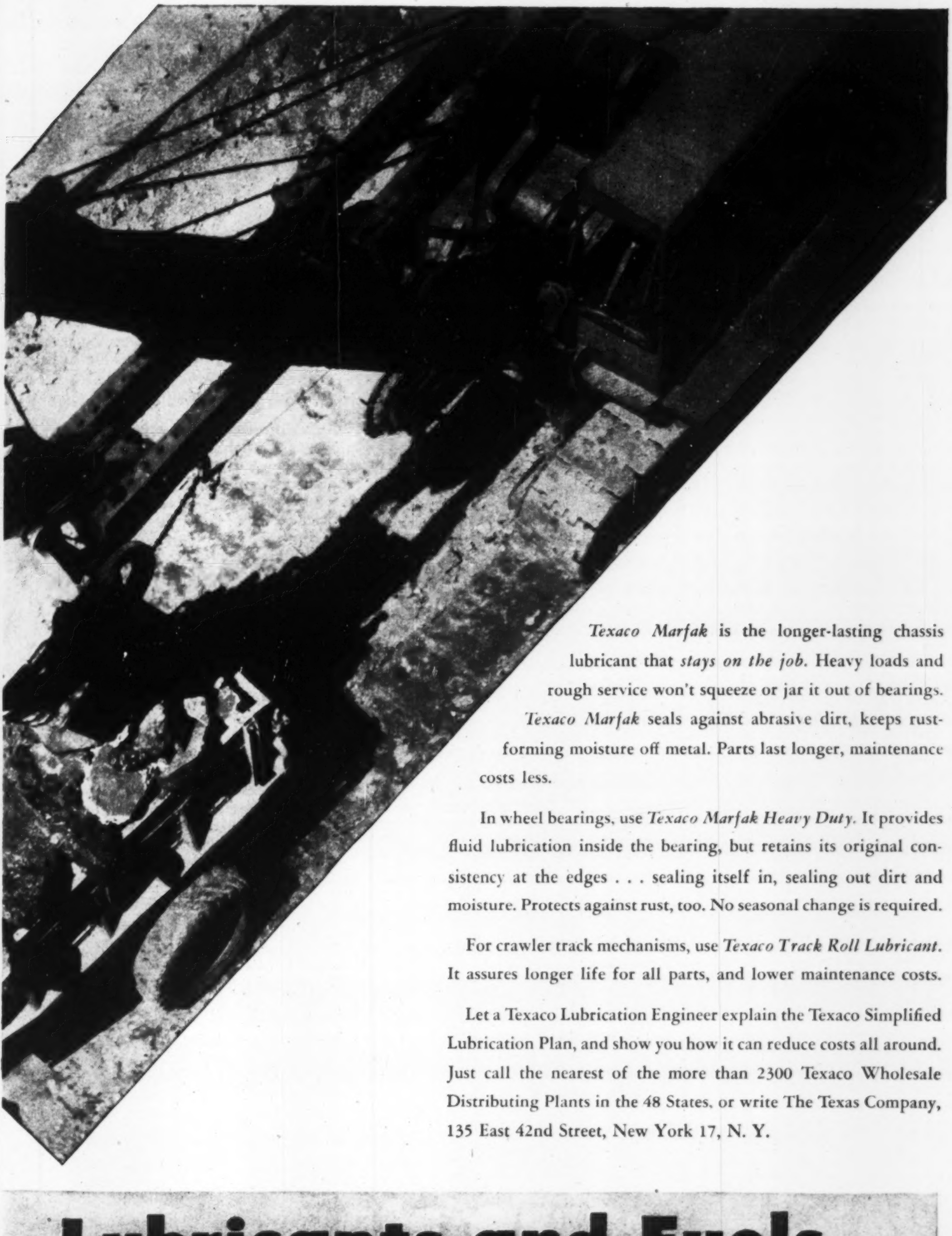
maintenance costs

Texaco Marfak assures longer life for all chassis parts

☛ MORE THAN 300 MILLION POUNDS OF MARFAK HAVE BEEN SOLD

TEXACO REG. T.M.

TEXACO



Texaco Marfak is the longer-lasting chassis lubricant that *stays on the job.* Heavy loads and rough service won't squeeze or jar it out of bearings. *Texaco Marfak* seals against abrasive dirt, keeps rust-forming moisture off metal. Parts last longer, maintenance costs less.

In wheel bearings, use *Texaco Marfak Heavy Duty.* It provides fluid lubrication inside the bearing, but retains its original consistency at the edges . . . sealing itself in, sealing out dirt and moisture. Protects against rust, too. No seasonal change is required.

For crawler track mechanisms, use *Texaco Track Roll Lubricant.* It assures longer life for all parts, and lower maintenance costs.

Let a Texaco Lubrication Engineer explain the Texaco Simplified Lubrication Plan, and show you how it can reduce costs all around. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

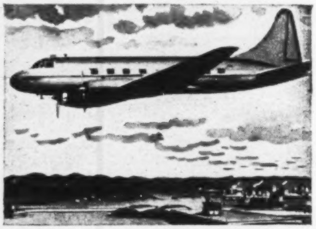
Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

How SPEED helped catch "bugs" in the lacquer

Final finish on pianos mysteriously going "sour." Production halted. Lab needed X-ray diffraction camera to identify impurity. At 9 A.M., 10-lb. camera Air Expressed from 1100 miles away, delivered by 4 P.M. *same day.* Cost, only $3.58. Company uses Air Express as routine method to get supplies fast, keep inventory low.

That low $3.58 figure was total cost for Air Express and included door-to-door service. That makes the *world's fastest* shipping method exceptionally convenient, complete, and easy to use.



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NEWS BRIEFS

That's a Lot of Roads—Texas' Highway Commission plans a $55,000,000 building program for 1950. Half of it is slated to be federal money.

Salesmen Front and Center—New Jersey's Turnpike Authority will make a thorough study of the relative merits of asphalt and concrete paving before determining what surface to use on its projected highway from the George Washington Bridge to Pennsville. Depending upon financing (by revenue bonds) initial contracts are to be let by mid-December, and the $175-$200-million road opened in 1951.

New Power Struggle—Interior Department, which controls Upper Columbia power sites and wholesales energy to the entire Pacific Northwest, is supporting its Fish and Wildlife Service in opposition to downstream dam construction by municipal systems or utilities. Pending presentation of "new facts," Interior is opposing Tacoma's application for federal license to build Mayfield and Mossyrock dams on the Cowlitz River. Fishing interests have been fighting the city power proposal back home and in Washington. Interior, after urging all possible non-federal power construction in the region, has switched to salmon propagation.

New York Joins New England—New York state has joined the New England Interstate Water Pollution Control Compact, of which Massachusetts, Rhode Island and Connecticut already were members. Upstream states of Maine, New Hampshire and Vermont have yet to ratify the agreement.

Double-Purpose School Design—Dallas, Tex., Board of Education has a new wrinkle in school construction. It needs a new school at Bluff View this fall, but it takes two years to plan and build a permanent building. So it's going to erect 10 separate temporary buildings at Bluff View to serve until the new building is ready. As the bumper baby crop overcrowds schools elsewhere in Dallas in future years, the temporary buildings will be distributed as needed, without being disassembled.

Six-Year Slum Clearance—Baltimore's City Council has authorized the Housing Authority to begin surveys for an $80,000,000, six-year slum clearance and low-rent housing pro-

(*Continued on page 10*)

now it can be told– metallizing stops corrosion

Storage Tank, Riverhead Water District, Riverhead, Long Island, showing riser pipe being metallized in 1940. Tank interior had been metallized in 1933.

. . . not for one, two, or even ten years—but *from 20 to 50 years* under severe conditions in the field!

We have long known that metallizing stops corrosion. Accelerated tests in the laboratory demonstrated that much. But we wanted a good backlog of actual applications in the field before telling the industrial world, *for sure*, what metallizing would actually do to help solve specific corrosion problems.

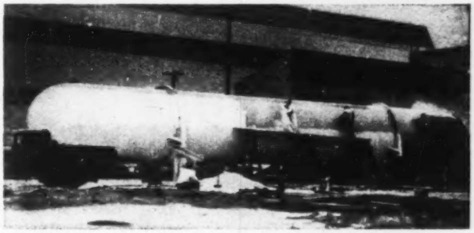
Here are two examples of anti-corrosion metallizing. The water storage tank shown is a good case in point. Previous maintenance practice had been to hot-coat the tank interior every 5 or 6 years. This service life was unsatisfactory. So, in 1933 metallizing was used, and pure zinc sprayed on the inside walls. At that time the tank exterior, riser pipe and structure were *painted*, but a small section of the pipe exterior was *metallized* with aluminum as a test panel.

By 1939 paint on the pipe had scaled badly, but the metallized test panel was in excellent condition—in the words of the Riverhead Superintendent, "... as good as the day it was put on." In 1940 the tank interior was inspected. It was found that all pitting and corrosion had been stopped completely by the metallized coating. Consequently, the entire riser pipe exterior was metallized at that time with a coating of zinc, followed by a coating of aluminum; then painted for appearance.

Now, nine years after, the paint has started to peel from weathering. But—even where it has peeled, the only surface exposed to the salt atmosphere on Long Island is the metallized coating, which is as sound as when it was first put on. The steel pipe has not been attacked at all.

Pipe Lines—Gas Holders. Another user laid a 12" pipe line in 1932. Extra heavy, double-dipped galvanized pipe was used because the line crossed numerous salt sloughs and marshes. All joints were welded and metallized with zinc where the galvanizing was burned off in welding. After 17 years the galvanized pipe has been eaten completely through and patched in many places; *but the metallized joints are still in perfect condition.*

This same user metallized 10,000 sq. ft. of gas holders with only .003" zinc in 1932; touched up a few thin spots in 1941. Although continuously exposed to salt atmosphere and acid fumes from a nearby refinery, these metallized surfaces are still in first class condition.



Metallizing high-pressure gas holders.

Further Information Available. Metallizing may help solve *your* corrosion problems. For further information, or the name of your nearest metallizing contractor, write:

STOP CORROSION
with Metallizing
METCO

FREE BULLETIN. Bulletin 62—"Stop Corrosion with Metallizing" pictures many different types of jobs, such as bridges, structural steel, barges, dam gates; includes spray test and life expectancy charts.

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NAME

COMPANY

ADDRESS

CITY STATE

RHOADS CONTRACTING CO., ASHLAND, PA., says . . . "excellent results experienced thru new Waukesha Diesel Engine, Model 6-WAKD in our Marion shovel. The performance has exceeded our expectations, with quite a saving in fuel and lube oil."

●

HICKORY CONTRACTING COMPANY, SHAMOKIN, PA., in speaking of conversion of their Marion Shovel to Waukesha Diesel Power, says: "The know-how of Auto Gear & Parts Co., Inc., engineers was really assuring."

2 CONTRACTORS . . . . 2 SHOVELS . . .

WAUKESHA Super-Duty DIESEL (Model 6-WAKD) six cylinders, 6¼-in. bore x 6½-in. stroke, 1197 cu. in. displacement, powers these Marion shovels.

WAUKESHA
***Diesel* POWER**

does a better job for BOTH!

For shovel work particularly, the most outstanding of all Waukesha Diesel characteristics is smoothness and trigger-quick response to the operator's every command. Lively, yet shudder-free, it meets every power and load demand with all the smoothness of steam. And that's a new experience, even to an old Diesel hand. Clean burning, its fuel economy is excellent. Built with rugged simplicity. Such features as hard, wet cylinder sleeves, simple overhead valve mechanism, gear-driven water pump cooling, and pressure oiling—all make the Waukesha Diesel easy to understand and simple to service. For all the details, send for Bulletin 1415.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES

gram. It's to have 10,000 dwelling units, start next year. The federal government has approved a $650,000 loan for the surveys, the second such loan to be approved.

Cheap Construction Money—New York's Chase National Bank was successful bidder for $5,000,000 worth of Montana bonds to finance new construction at six different state schools. Its premium of $28,950 cut the overall interest cost to 1.53 per cent. There were eight bidders.

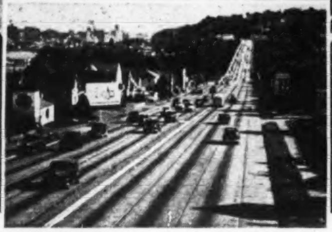
Swords Into Plowshares Note—Converted LSM's (military jargon for Landing Ship, Medium) are serving as barges for movement of cement 198 mi. up the Columbia River from Portland for construction of McNary Dam. They take as much as 4,000 tons per trip. The job uses 3,000 to 4,000 cu. yd. of concrete daily.

Florida Bucks the Trend—Publication of an architect's drawing of the proposed Hillsborough County (Tampa) courthouse raised local temperatures—there weren't any windows. Architect W. O. Sparklin explained in vain that windowless buildings are the trend, that building costs would be lower and air conditioning investment and operation would cost less his way. Opponents claimed it was no proper promotion for the Sunshine State's sunshine, forced a hearing. The verdict: "As many windows as possible."

No Tax on Air, Though!—Olympia, Wash.—like any other city—likes to see buildings go up. But City Council's civic pride has been tempered by the fact that parking meters adjacent to construction projects don't take in many nickels. So Council is preparing an ordinance which will require contractors to take out a parking area permit simultaneously with a building permit. It'll cost builders 2.5 cents per lineal foot of curb space each day that construction ties up public parking.

Needed: A Philadelphia Lawyer—Have home owners the right to picket the premises of a builder from whom they bought their homes? A Philadelphia judge will have to decide. The Temple Construction Co. has asked a Quaker City court to bar picketing by 42 husbands and wives, who bought homes from Temple, from picketing a new Temple development. Temple's brief says the pickets complain of water in their cellars, that it fixed leaking basements in homes whose owners allowed them to do so, but that the pickets want it done differently than Temple proposes to do the job.

MAIN BUSINESS STREET. Fourth Avenue, which carries U.S. 99 traffic through the heart of downtown Seattle. Block-type pavement replaced with 6" concrete resurfacing in 1937.



PRINCIPAL ARTERIAL STREET. Aurora Avenue, built in 1933, provides 3 traffic lanes in each direction for the unobstructed movement of heavy and high-speed traffic (1) traveling to and from outlying residential districts and (2) entering and leaving Seattle over U. S. 99, the Pacific Highway.

In Seattle maintenance costs are lowest on *CONCRETE STREETS*

SEATTLE HAS MORE than 11,000,000 sq. yd. of concrete streets —more sq. yd. per capita than any other city in America with more than 100,000 population. There's a reason:

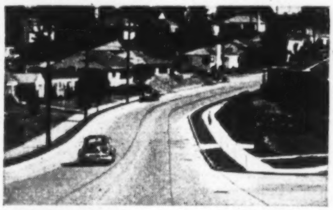
Street maintenance records for a 25-year period beginning with 1924 show that the average annual cost of maintaining portland cement concrete streets was only $.00098 per sq. yd. per year—*less than 1/10th of one cent.* The average annual cost of maintaining the two other types of pavement was $.00563 and $.00682 per sq. yd. respectively—*5½ to 7 times as much!*

Twenty-five years ago only 30% of Seattle's paved street yardage was concrete, but its long life, low maintenance cost and many other advantages resulted in steadily increased use. Today concrete accounts for 69% of the city's paved street yardage. Despite this preponderance of concrete, Seattle taxpayers have paid 72½% less to maintain the concrete pavements than to maintain the two other types of pavement combined during the 25-year period.

The experience which made concrete the preferred pavement in Seattle has been repeated in hundreds of cities. Concrete usually costs less to build than other pavements of equal load-carrying capacity, it costs less to maintain and it lasts longer. These three factors result in ***low annual cost,*** which pleases taxpayers.

For more information about how to build ***low-annual-cost*** pavements, write for free booklet, "*Design of Concrete Pavements for Municipal Streets.*" Distributed only in the United States and Canada.

RESIDENTIAL STREET. 22nd Street, N.W. Renowned for the first recorded use of dummy groove contraction joint. This street was paved in 1921.



RESIDENTIAL STREET. West Viewmont Way. Paved with portland cement concrete in 1948.

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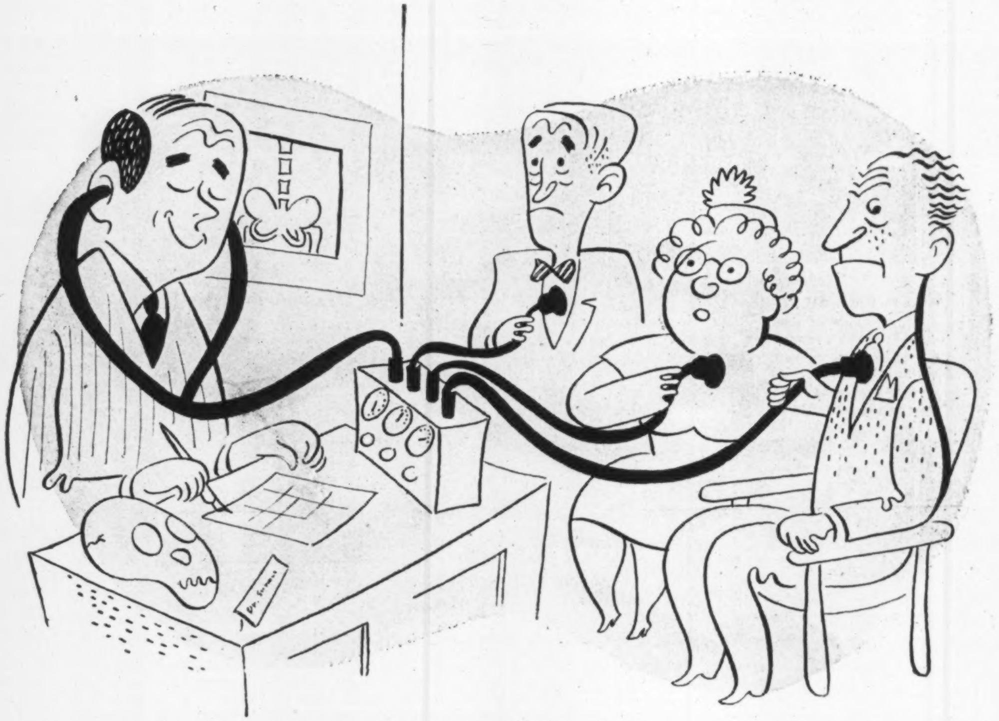

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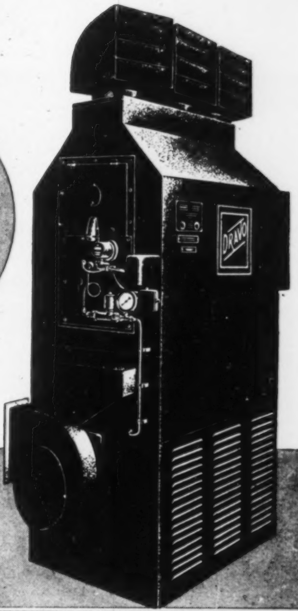

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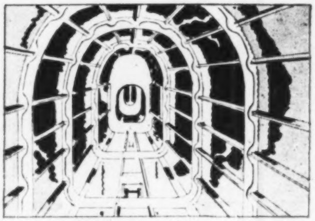

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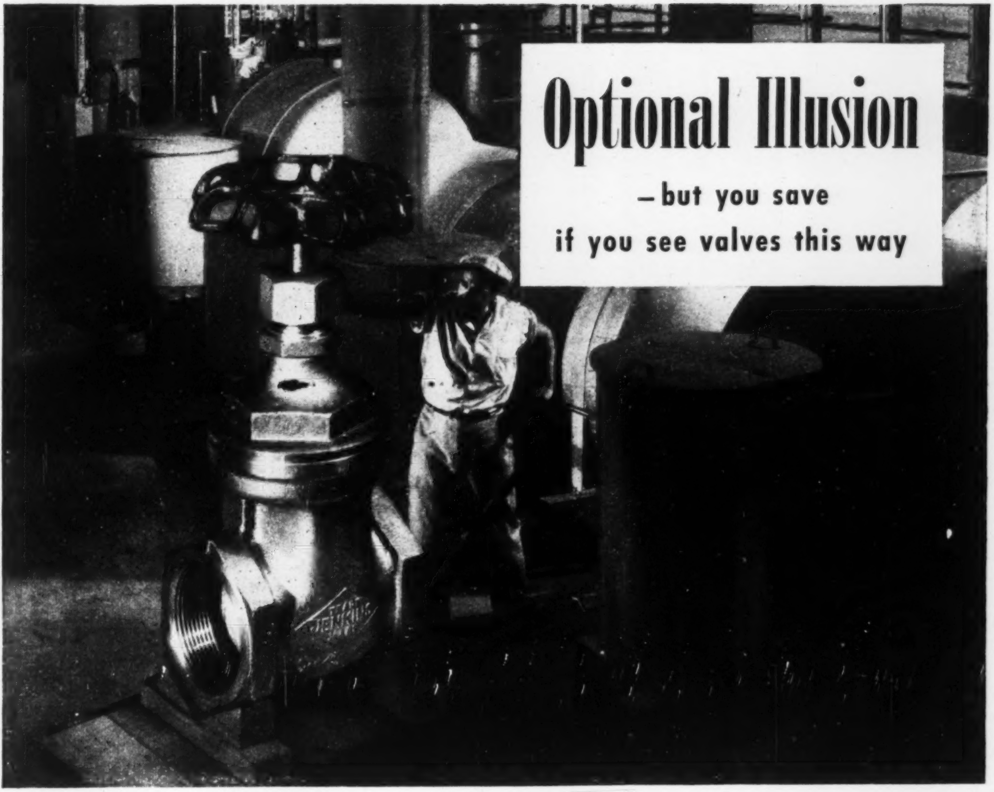

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THE CONSTRUCTION WEEK

CONSTRUCTION NO PANACEA—The administration is finding that it can't do all it hoped for depressed and high-unemployment areas merely by shoveling in public works contracts. And it's finding specifically why this is true. Although the idea looked good to the planners—a check showed that in some depressed areas public construction was off as much as 87 percent—here's what has been found: (1) Direct relief payments have hit local treasuries hard enough to bar diversion of funds to streets, sewers, etc.; (2) Debt limits hamper local efforts to raise capital with which to match federal grants; (3) Federal funds aren't too plentiful—there are limits to the cash, and restrictions as to how much can be channeled here and there, as needed; (4) Even booming construction takes only 4 percent of the labor force—and few women factory workers. Example: Fall River (Mass.) shows construction up 1,500 percent over 1948—but it's still a depressed area.

BIGGEST HIGHWAY LETTINGS—Pennsylvania plans to place nearly 50 percent more highway work under contract in September than in any previous month. The total will exceed $23,000,000, in four lettings. The highway department's previous all-time record was $16,000,000 worth of contracts awarded in July, 1948. Notable for its high volume of highway construction, Pennsylvania awarded 393 contracts totaling $87,000,000 for highway construction and reconstruction during the first eight months of this year. The September lettings not only will bring the year's total well above $100 million, they also challenge contractors to step up the tempo of their construction for completion before winter sets in.

EVERYBODY GETS A PLAN—A "Sawyer Plan" for business—counterpart of the loudly heralded "Brannan Plan" for agriculture—is in the first stages of development. That's one of the reasons why Commerce Secretary Charles Sawyer is touring the land. He sees the need for a formal business pattern as part of the administration's political package for the 1950 elections. The things he's been hearing most often so far from businessmen are these: (1) Cut excise taxes back to prewar levels; (2) Shorten the base period for tax depreciation of machinery and equipment; (3) Guarantee small business loans, as is now done for home loans; (4) Make it easier to do business with government by getting rid of the red tape which now surrounds the process.

CLEVELAND'S TRANSIT PLAN—Cleveland voters will be called on to approve a charter amendment—worth $20,200,000 in new capital to the city—at a special election Oct. 4. Reconstruction Finance Corporation will approve a loan in this amount for the construction of rapid transit lines east and west from Public Square. But one stipulation of the agreement is that the construction and operation of the new transit system be divorced entirely from city politics. This the proposed charter amendment would do through the creation of a five-man bipartisan transit board. The board would have full power to manage, operate and maintain the city's transportation system. Chicago's success with its four-year-old rapid transit authority—now headed by Ralph Budd, retired president of the Burlington Railroad—is cited as convincing proof that non-political transit authorities are a "must" for big cities.

BLS MAKES IT OFFICIAL—The unemployment outlook is changing for the better, according to the Bureau of Labor Statistics, whose mid-August figures may be too early to show it. BLS' reasons for optimism: businesses are rebuilding inventories; prices in many lines are firming; bank loans are increasing for the first time in half a year; and production is turning up in many lines. August should be the turning point in unemployment—many will leave the labor market.

MORE FOREIGN CAPITAL—The construction industry's work backlog will receive a boost when the World Bank enters the money market this winter for another $100 million of capital. This issue, the Bank's third, probably will consist of 25-year, 2.75 percent bonds. Previously, the bank had sold $250 million worth. It has loaned $717 millions so far, has $326 million on hand, with proposals that would take another $100 million.

BETTER POPULATION DATA—Some major new market research should start flowing from the Commerce Department. It's establishing a Population Estimates and Forecasts unit in the Census Bureau to meet needs of business and public agencies. Principal tasks will be to re-interpret existing data on age and sex characteristics of the population; to improve the bureau's periodic estimates of population distribution and concentration by area; and to break down population on a county-by-county basis. This last item is one long planned. It will follow next year's census.

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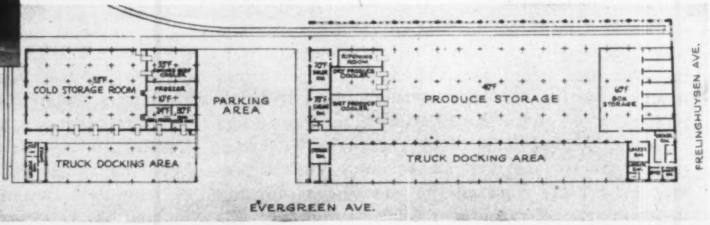
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How Much Yearly for Roads? $4 Billion Seems Likely

How big a highway program does the United States need?

Evidence is piling up to show that this country's needs for new highways, and for rebuilding much of our existing system, is much greater even than road builders thought.

There are three basic reasons. Wartime neglect left many roads below standard, and materials and manpower shortages have stymied attempts to catch up. Secondly, the United States has grown far faster than its road system in the last ten years. Finally, the highway system thrown across the nation in the 1920's never was designed for the volume and speed of today's traffic. In any case, a good share of these roads have worn out.

The United States population will cross the 150 million mark this year—13% larger than it was in 1940. In that time, the number of cars, busses, and trucks has climbed more than 20%. And the number of miles they are driven each year has climbed more than a third.

Last year, Americans drove more than 41 million vehicles an estimated 400 billion miles. This year, the number of cars and trucks will grow several million.

While highway traffic has spurted this way, highway construction has lagged behind. During the war years, highway work fell to about 25% of what it had been in 1940. War demands diverted men and materials from highway construction so that in the years 1943, 1944, and 1945, the nation wore out its roads while doing little or nothing to build them up. Highway construction volume spurted in 1946 and '47—but shortages still held it well below the prewar level. In 1948, the gain leveled off, so that physical volume was only slightly more than in '47. This year, by Commerce Department reports, work may rise again slightly.

On one basis, new highway construction in 1948 was still only about 80% of what was done in 1940. Meanwhile—as we have seen—traffic has increased about one-third.

In short, we have less highway capacity, per car or truck, than we had 10 years ago. Traffic has outstripped highway construction by a long margin.

What will it cost to put the United States' road system into passable shape?

Complicating this question is the fact that indexes of highway construction costs have more than doubled since 1940. In addition, the most urgent traffic bottlenecks generally are in urban areas. So bad is congestion in many city streets that, even before the war, it frequently held traffic to speeds below a good horse-and-buggy pace. But expressways to eliminate these bottlenecks may well cost several million dollars a mile. The proposed Cross-Bronx Expressway in New York City, for example, will be 5 miles long and is expected to cost $34 million.

Nevertheless, there are good indicators as to the size of the highway job. State legislatures, about 18 of them, have made systematic surveys of their states' needs. In California, a road-by-road survey two years ago revealed that the state needed a 10-year highway building program that would cost $2 billion. Since the survey was made, rising costs may have boosted that estimate. In Kansas, a committee recently suggested a 20-year program costing almost $1 billion.

State highway departments of 43 states, working with the American Association of State Highway officials in 1947, made a survey of the cost of improving designated federal-aid road systems. Their total figure—on about 600,000 miles of the federal-aid highway system—was slightly more than $20 billion. Since then the Joint Congressional Committee on the Economic Report has made a survey of highway needs in 34 states. Senator Joseph C. O'Mahoney, chairman of the committee, in releasing the survey, noted that the backlog of work "will afford an unmeasured market for business and industry." Reports from these 34 states indicated a backlog of $20 billion. Work now under contract by all the state highway departments totals slightly less than $1 billion.

The Federal Works Agency, taking a look at the nation's overall highway needs early this year, suggested that highway construction should be geared up to take care of needs totalling about $60 billion.

If this huge need for highways were met with a 20-year program, it would cost about $3 billion a year. In addition, there would be $1 billion or more of work each year in highway maintenance.

In short—to meet its highway needs—the United States might well spend $4 billion a year. This checks an estimate made early last year by G. Donald Kennedy, vice president of the Automotive Safety Foundation, of $4.3 billion, which included $300 million for debt service (ENR April 29, 1948, p. 80).

In contrast, last year, by estimates of the Department of Commerce, the United States spent about $2.7 billion for highways. About $1.6 billion of this was new construction and $1.1 billion went for maintenance.

Big as our highway needs are, they are small in relation to what Americans spend in all for highway transportation. Last year the total cost—including cars and trucks, repairs, tires, gasoline and all related services—is estimated at $30 billion. That was roughly one-eighth of the national income.

The $60 billion backlog of needs, and the rapid rise in highway use, underline the prospects for highway construction!

Highway work promises to rise steadily in volume in the next few years—and to stay at a level of close to $4 billion a year for many years to come.

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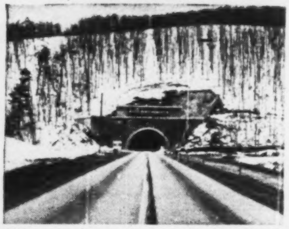
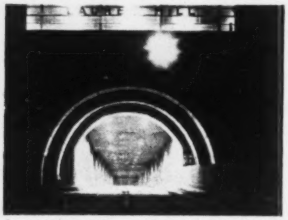
The long sweeps of smooth concrete on the Pennsylvania Turnpike are travelled comfortably by over three million vehicles a year.



Wide extremes of climate and topographical conditions are met in the Pennsylvania Turnpike.



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Endless thousands of vehicles of all types pound the Turnpike at high speed daily. Heavy snows and sub-zero temperatures are common in winter. The broiling summer sun beats down relentlessly upon the 160 miles of dual highway. Yet, despite this constant punishment since 1940, the Pennsylvania Turnpike has set an excellent record for economy of upkeep.

Thousands of tons of Truscon Welded Wire Fabric were used for reinforcing the Pennsylvania Turnpike pavement, to effectively control progressive cracking, heaving and faulting.

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Entrance to the Tuscarora Mountain Tunnel on the Pennsylvania Turnpike.

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EDITORIALS

Advance Planning

The directors of the Wisconsin State Professional Engineers have voted 5 to 4 that they do not favor a return to federal aid for advance planning of public works. Despite the closeness of the vote, the action deserves applause as an expression of a fine and almost forgotten virtue—taking care of oneself. To be wholly consistent though, the WSPE should now lend its support to local advance planning of public works. For advance planning is necessary, however it may be financed.

In these columns July 7 (and in contrast to the action of the WSPE directors), Congress was urged to revive the program of interest-free federal loans for community facility planning that it allowed to lapse in June, 1947. This recommendation was based on the fact that experience has shown that the availability of such loans stimulates advance planning, even though not all communities use the federal funds. The loans also aid those communities that have local or state laws prohibiting expenditures on projects before they are definitely authorized by the voters. Since the loans have to be repaid when projects reach the construction stage, the cost to the federal government is a minimum, namely the amount of the interest.

Even though Congress should decide to reinstate community facility planning loans, however, the action of the Wisconsin engineers would be no less constructive. Their opposition to borrowing from the federal fund would still beckon emulation by others able to do their own advance planning unaided. As a matter of fact, Congress is so far behind on its legislative schedule that it is not likely to get around to public works planning at this session. Under the circumstances, local initiative on planning is all the more necessary.

International Meetings

A useful assist to orderly world development should be credited the United Nations Economic and Social Council for organizing the conference on the conservation and utilization of resources held at New York during the past three weeks. The program was formidable, both in size and content, as is likely for such international gatherings. Yet, by being constructive in purpose, well planned in advance, and efficiently presented, the program transmitted a maximum of information to the participants.

It is important to observe all these requirements for all international engineering congresses, and particularly to arrange to present the papers in an intelligible and digestible manner. Papers are usually long and detailed; no more than an abstract should be admitted for oral presentation, but with the whole paper availabe in printed form. Speakers will use several languages; provision should, therefore, be made for simultaneous translation of all convention proceedings. Finally, although a few general or plenary sessions are necessary, the program should be largely channeled into sectional meetings of specialists. These meetings are the ones that produce the ideas that can be put to work.

The conference at New York adhered fairly well to these specifications, and delegates thus exacted the maximum benefit from its proceedings. International engineering meetings seem destined to increase in number and frequency. Granted they have a worthy objective; such meetings can confidently be planned along the lines followed by the United Nations Organization in its natural resources conference. As a matter of fact, many local meetings could profitably follow the practice of confining paper presentations to 5 to 10-min. abstracts, with greater audience participation in discussion.

Clean Stream Cooperation

Great strides made by some states—both individually and jointly—toward development of workable and effective clean-stream laws emphasize the need for other states to enact similar legislation.

A poll of state health departments made by Engineering News-Record in an effort to obtain the up-to-date and complete pollution-prevention picture is reported elsewhere in this issue. Although the data are probably as complete as any obtainable, there are so many variables that comparison of the many existing codes relating to pollution abatement is well nigh impossible. Neither is it possible to patch together from the great variety of laws one standard that would fit the needs of all. As the problems vary, so must the solutions. Too frequently, however, unsolved problems prevail; laws fall short in preventing undesirable pollution conditions; administering agencies lack necessary authority to correct existing situations.

There is a challenge here for sanitary engineers and lawmakers of all states. In meeting it, interstate cooperation—not federal legislation—is the answer. The problem belongs to the states, and responsibility for its correction lies also with them. Cooperation in clean-up of entire river valleys has caught on in many areas, with promising effect. But only a start has been made.

Existing pacts among states can be strengthened and expanded; other drainage basins in need of protection await attention. States must help states in this evergrowing problem affecting the health, welfare and economy of the nation.

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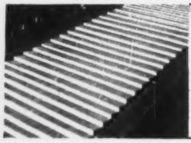

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ENGINEERING NEWS-RECORD

SEPTEMBER 15, 1949 VOL. 143 NO. 11

Pollution abatement laws present confusing picture

Engineering News-Record checks health departments—Forty-two states have laws, but they vary widely in content and applicability because specific problems differ

By A. J. Fox, Jr.
Assistant Editor

The only reason there aren't 48 distinctly different state stream-pollution-abatement laws is that several states have no law at all.

A complete, but confusing, pollution prevention picture has been put together as result of a nationwide survey of state health departments. Attempting to find an up-to-date, accurate picture of the current situation in clean-stream legislation, ENGINEERING NEWS-RECORD queried officials of all states.

When asked "Has your state an anti-pollution law?" 41 states and the District of Columbia answered "yes." (Those states reporting no laws whatsoever are seven: Georgia, Idaho, Missouri, North Carolina, South Carolina, Utah and Wyoming.)

But those 42 affirmative answers mean nothing unless viewed in the light of answers to other questions. Tabulated results of the survey show those "yes" answers backed by such a multitude of variable conditions that it is impossible to say unqualifiedly, "These states have anti-pollution laws, and those do not."

Comparison difficult

The main, and most obvious, difficulty in comparing clean-stream laws is the fact that no two states have the same stream pollution problem. What's good for Nevada won't do for New York; Pennsylvania's requirements are unnecessary in Wyoming. State health officials answered "yes" to the question whether their law was just a few paragraphs written into the health laws in 1917 or a voluminous, '49-model stream sanitation code such as those just written by several states.

In either case, the "yes" answer is, of course, perfectly correct. Still it gives no indication of the law's effectiveness. Neither would exhaustive analysis of each state's regulations indicate their worth without an on-the-spot study of local needs. No two states, no two rivers—indeed, no two given lengths of the same river have identical conditions and needs influencing writing of a satisfactory sanitary code.

Some are growing old

Laws go back as far as 1893. Some nearly that old are still in effect; most that age have had one or more amendments.

The older laws, as their chief provision, give the state health department the responsibility of correcting pollution conditions endangering the public health. This has had the effect of setting up the health department as a complaint-adjustment agency which hears allegations, studies the case, and then orders the correction of the abusive practice involved. Courts usually must be resorted to for a finding in the case.

THE COVER PICTURE

Now heading the nation's biggest (eight states) and newest (2 years) attempt at control of pollution on a river-basin basis, big, hard-driving Joseph L. Quinn is an engineer who knows politics, business problems—and fishing.

He'll need all his knowledge and all his patience in his newly-acquired job as chairman of the Ohio River Valley Water Sanitation Commission, which is attempting to abate pollution in the 200,000-sq.mi. Ohio River drainage basin.

A civil engineering graduate of Purdue University, he has been assistant city engineer of Bedford, Ind. and assistant superintendent of the Bedford Water Works; engineer of design, location and construction for the Indiana State Highway Commission; consulting engineer to the city of Indianapolis; chief engineer of the Indiana State Board of Health. He's now vice-president of the Terre Haute Gas Corporation and engineer for The Hulman Co., food processors; safety director of the Indianapolis Motor Speedway. In 1945-47, he served as president of the Indiana division of the Izaak Walton League.

Present-day legislation is trending toward establishment of a separate agency—within the health department—which is given powers along with its responsibilities to abate stream pollution.

States recognize problem

There has been a rash of such legislation since the end of World War II.

Altogether, 27 states have enacted or amended stream sanitation laws in the postwar period. And up to now, 26 states have set up separate agencies within their governments to administer the laws. These agencies differ as to size, purpose and authority granted them.

They have many designations: water improvement advisory commission, water pollution control board, state water commisision, state sanitary authority, etc.

Powers vested in these groups vary greatly. Some are no more than voluntary advisory committees. Others have the authority to see that regulations are carried out.

Those states claiming to have anti-pollution laws, yet naming no special administering agency for them, make the state department or board of health responsible in 13 out of 14 cases.

As the lone exception, Mississippi calls on the State Game and Fish Commission to protect streams. States with neither laws nor responsible agencies leave it to the courts and require that suit be brought in every action.

Central authority lacking

In at least three states, responsibility is divided between two regular governmental departments—the health department and either the fish and game or the conservation commission. Where special administering groups do exists, they often lack power to correct or prevent and must have con-

(Continued on page 28)

Court awards cost of moving to owner

Connecticut Highway Dept. to pay for removal of equipment from land acquired in highway relocation

Connecticut's Supreme Court of Errors has ruled that in a $42,100 award for land taken over by the Connecticut State Highway Department, the Superior Court should also have considered expense of removing machinery from the property.

Judge Thomas J. Molloy of the Superior Court made the award to Harvey Textile Co. for property at Shelton, Conn., where the Shelton-Derby road is to be widened. The textile company appealed, and a state referee declared that damages to the company, including machinery removal and reassembly, totaled $47,100.

The opinion of the Supreme Court of Errors was written by Justice Newell Jennings. He pointed out that decisions in other states are not in harmony on this subject, and the weight of authority maintains that the cost of removal of personal property is not in itself a legal element of damage.

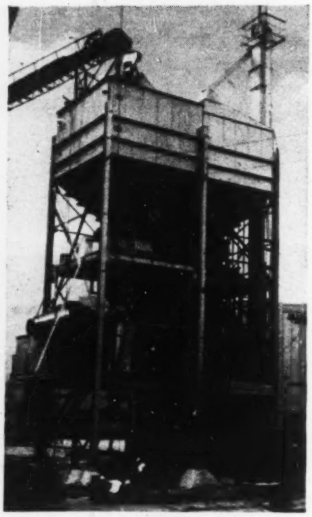
However, his opinion held that all damages resulting from taking of land for highway purposes shall be paid.

Everything of value considered

"Since the statute provides for the recovery of all damages and since everything by which the value is legitimately affected is to be considered, the only remaining question is whether the necessity of removing the machinery legitimately affected the market value of the property," Justice Jennings held.

"A simple illustration will bring out the application of these principles to the case. An owner would demand a higher price for a factory containing complicated and valuable machinery than he would for the same building idle and empty, because he would be faced with the necessity of moving his machinery to save it. His willingness to sell would be affected by this consideration, which would thus enter into the fixing of a fair market value. It was therefore the duty of the trier to consider this element in arriving at the fair market value, not as a specific separate sum of money to be added to the value of the land but as evidence tending to prove its fair market value," he ruled.

Connecticut cases show that proper measure of damage in condemnation proceedings is an active source of litigation. Judge Jennings pointed out that the interest of public welfare and justice require that the subject be considered in its broader aspects.



FIRST 6-YD. MIXER ever built—installed at Camden (N. J.) Lime Co.'s new plant, which begins operations this month.

ALSO RECORDED

Husband Engineering—As a part of the recent commencement of the school of engineering of Tulane University at New Orleans, La., the spouses of the married members of the class were handed degrees signifying that they were "Masters of Patience in Husband Engineering".

Saccharine Smoke — Los Angeles' much-discussed municipal incinerator recently began to exude large quantities of smoke and ash. Complaints rolled in. Said a Board of Public Works spokesman, "Unknown to us, somebody dropped 11 tons of candy bars in the refuse pit. It won't happen again."

Added Trouble—The contracting firm of L. G. De Felice and Son, Inc., of North Haven, Conn., almost lost a $4,689,417 contract from the Pennsylvania Turnpike Commission because of a $60,583 error in addition. When the commission opened bids for 7.7 miles of the super-highway's eastern extension near Paoli, it was announced that James D. Morrissey and Co., of Philadelphia, was the low bidder at $4,690,000. In second place was the De Felice firm with a bid of $4,750,000. The commission's statistical division, checking the bid figures in routine fashion, discovered that De Felice had made a mistake in addition. The De Felice organization put the blame on their adding machine, or its operator.

New Rochelle must build sewage disposal plant

New Rochelle, N. Y., has 90 days to make plans for a new sewage disposal plant. This was an order of the Interstate Sanitation Commission, a tri-state agency established by New York, New Jersey and Connecticut to regulate the disposal of sewage into the waters of the lower Hudson River, New York harbor and Long Island Sound.

It charged that the city is adding to pollution of Long Island Sound along a 9-mile waterfront.

The commission intimated that if New Rochelle, within the 90 days, did not chart a working schedule for construction of a new sewage disposal plant, the commission itself would issue an order and establish its own dates for taking bids, awarding contracts, and beginning construction.

Aaron Simmons, New Rochelle corporation counsel, acknowledged the existence of pollution but protested at first that a new sewage disposal plant and sewer system could not be built without exceeding the city's legal limit of bonded debt.

The attorney requested a further delay during which New Rochelle might study the possibility of obtaining state and Federal aid for the project.

Later Mr. Simmons conceded that the city has approximately $4,000,000 of leeway between its present indebtedness and the statutory debt limit. He objected, however, to submitting a schedule for the sewage project on the ground that the city council must first hold public hearings and pass enabling fiscal legislation for a new disposal plant.

The commission then adjourned the hearing until Nov. 16, to give the community time to take steps.

◆

Study new Seattle Bridge

Nothing succeeds like success—or a disputed bridge which pays for itself 19 years ahead of schedule. So Washington State's Toll Bridge Authority has approved a preliminary survey for a proposed second bridge across Lake Washington, east of Seattle, (ENR Aug 11, p. 20.)

The state highway department will make the survey to determine the need for such a bridge, its location and whether it could compete for traffic with the toll-free pontoon bridge.

The Authority also approved the proposal of Wasco County, Oregon, to build a $2,511,000 toll bridge across the Columbia at The Dalles.

AISC revises building steel code

After extensive canvass of consulting engineers and building officials, the American Institute of Steel Construction has revised section 18 of its Specification for the Design, Fabrication and Erection of Steel for Buildings.

As revised, section 18 recognizes that no significant corrosion ever will occur in the steel frame of a hotel, apartment, office building or the like—under conditions expressed for specification purposes as "indoor atmosphere controlled for human comfort." But the section recognizes that corrosion, although preventable by properly maintained protective coatings, may not be wholly prevented if the steel is exposed outdoors or is exposed indoors to the random atmosphere of a steel plant or foundry, or is inclosed in walls that are not tight.

Thus, owners and designers must bear responsibility for determining what exposure conditions will exist and whether minimum thickness stipulations will apply.

Governing factors listed

Stipulations 1 and 2, if applicable, are related to the relative importance of the individual member to the structure as a whole; to the probable severity of exposure; and to the accessibility of the member.

Specifying of any minimum to provide for corrosion is in no way intended as an alternative for shop and field painting. Experience has shown that when maintenance is neglected or deferred too long, thinner members suffer disproportionately. Thus, the committee felt, a continued limitation on minimum thickness of these lighter members is warranted.

Paragraph (a) of the specification has been rewritten as follows:

"(a) General. The minimum thickness required for protection against crippling, buckling and shear are prescribed in Paragraphs (b) and (c) of this section and in Paragraph (b) of Section 26, (relative to plate-girder webs) respectively. Those stipulations assume that the material is straight and true as erected, within the limits prescribed in Section 33 (q) (referring to tolerances in fabrication) and is not reduced by corrosion.

"No further stipulations as to minimum thickness shall apply to steelwork exposed to conditions no more seriously corroding than an indoor atmosphere controlled for human comfort, subject always to the requirements of section 34 (a) (Shop Painting).

"The following stipulations (1) and (2) as to minimum thickness shall apply to exterior steelwork enclosed in a non-impervious envelope or exposed to frequent rain or snow, and to interior steelwork subject to atmospheric exposure more corrosive than that mentioned in the preceding paragraph:

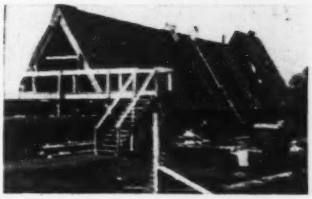
"(1) Columns, studs, lintels, girders and beams; exterior trusses, exterior bracing members; $\frac{1}{4}$ in. minimum.

"(2) Purlins, girts, trusses and bracing members sheltered from direct exposure to rain and snow; $\frac{3}{16}$ in. minimum.

"The controlling thickness of rolled shapes, for the purposes of stipulations (1) and (2) shall be taken as the mean thickness of their flanges, regardless of web thickness.

"Steelwork exposed to industrial fumes or vapor shall be given special protection as required in the judgment of the engineer."

Former paragraph (b) of the specification has been deleted. The two remaining paragraphs, unchanged, have been redesignated (b) and (c) respectively. Thus, the new (b) and (c) give maximum permissible width-to-thickness ratios of projecting elements under compression and of webs and cover plates of compression members.

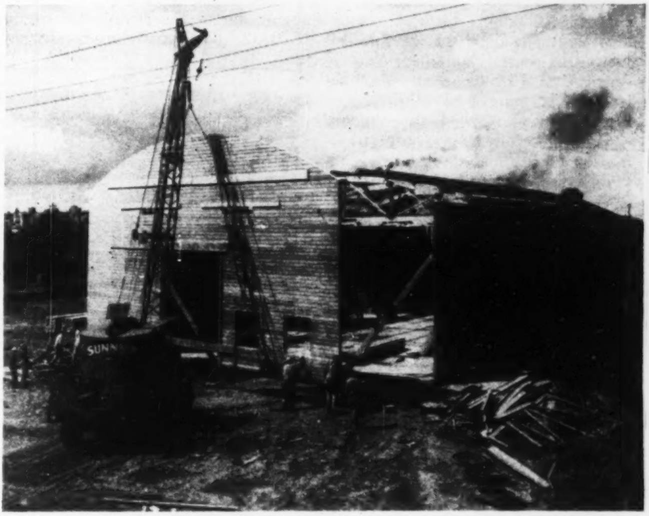


PIPELINE PROTECTION—from steel and concrete, not the weather—will be afforded by this shed. It protects several utility pipelines between a du Pont plant and a power station against anything which might be dropped from the New Jersey approach to the Delaware Memorial Bridge, now under construction below Wilmington. Heavy timber frame is sheathed with 2-in. timber and sheet steel.

To urge 3 Capitol bridges

District of Columbia's National Capitol Park and Planning Commission will recommend construction of three new bridges in or near Washington. Two would by-pass the city to the north and south. They are:

1. From Alexandria, Va., to Shepherd's Landing in southeast Washington, connecting with a by-pass.
2. From Nebraska Ave., N. W., to Virginia's Arlington County.
3. From Cabin John, Md., to Fairfax County, Va., joining by-passes in each state.



SIX HOURS was all it took to erect the wall sections and roof framing of this 50x100 ft. warehouse 20 ft. high, at Tacoma, Wash. Fabrication of the walls and two gable sections was done on the ground, saving scaffolding and the time of carpenters ordinarily required to hold one end of the siding. The walls were raised by a crane onto a concrete floor. Fabrication-erection took a five-day week. Roy T. Earley Co. was contractor.

N. C. contractors must sue for ruling on legality of equipment purchase

State high court bars advisory opinion—Court test may be sought—Report made on state cement plant, sought on power development

North Carolina's statehouse continued in the news this week with these developments of interest to the construction industry:

1. Chairman Henry W. Jordan, of the Highway Commission, said the state Supreme Court had refused to pass any opinion on legality of a machinery and equipment purchase with funds obtained from a rural roads bond issue (ENR Aug. 25, p. 10) unless an appeal is presented from a lower court rule.

2. Counsel for the two contractors' organizations which fought the equipment purchase plan asserted that neither group plans legal action, although some indication remained that an appeal might be taken by another party.

3. Possibility that the state may undertake a cement manufacturing business of its own within the Highway Commission loomed through the first report of a commission appointed to investigate the idea.

4. Gov. Kerr Scott appointed a committee to recommend to him a comprehensive policy for statewide flood control and hydroelectric development.

5. The Highway Commission, with almost $5,000,000 worth of equipment contracts approved, voted to sell its present central equipment shop at Raleigh and to build a new shop on land to be purchased nearby. The commission also voted to condemn land, if necessary, for a new Commission office building at Raleigh adjoining the existing building.

Confer with court

Jordan's announcement that the high court had passed a chance to render an advisory opinion of equipment purchases—ardently desired by the contractors—came after he, the attorney general who ruled the purchase legal, and an attorney for the road builders had conferred with the chief justice.

With this avenue closed, and with both the Carolinas Branch, Associated General Contractors, and the Carolina Road Builders' Association on record against any legal action themselves, the possibility remained that a suit might be brought to test legality of the use of rural road funds for machinery. A contractor who refused to let his name be used told ENGINEERING NEWS-RECORD's correspondent that "a number of contractors are gravely interested" in the matter—perhaps to the point of taking it to court. This source thought "we can get a matter like that to the Supreme Court rather quickly with cooperation."

North Carolina's proposed entry into the cement manufacturing business arose earlier this year when the legislature established a commission to investigate. After two days of hearings late last month, the group recommended employment of engineers to make further exploratory studies of raw materials within the state. It wants further data on "the extent, depth, continuity and quality of marl beds in the Coastal Plains areas, particularly around Castle Hayne and along the Trent River." Also to be studied is the character of limestone deposits in the general area of Murphy, Marion and Kings Mountain.

"Want to build plant"

The committee was authorized to decide whether or not to set up a cement manufacturing plant in view of the vastly increased need for cement during the state's forthcoming $200,000,000 rural road program. The state now spends about $8,000,000 for cement. The commission chairman said no recommendation to proceed would be made unless "the ingredients exist in sufficient quantities," and he added:

"Cement can be made in North Carolina and it can be made at a reasonable price. We want to build a plant and put it where it would do the most good."

In calling for a flood control and hydroelectric power survey, Gov. Scott warned the state that it had "certainly better get busy . . . if we don't want to get left behind." He said that North Carolina is far behind other southern states in developing its power resources and that as a result, it may lose industry to other states.

He said Army Engineers had told him there are many good sites on the Yadkin and Catawba Rivers which would yield plentiful and cheap power along with flood protection.

Pipeline ruling reversed

Kentucky's Court of Appeals lost little time in upholding the constitutionality of a 1948 law easing condemnation procedures for pipeline companies. Scarcely a week after Jefferson County's Circuit Court had banned the 1948 statute, (ENR Aug. 25, p. 12) the appeals bench reversed the lower court. Appeal had been taken for Williams Brothers, Tulsa contractors who are building part of the 860-mi. pipeline of the Texas Gas Transmission Co.

PX PROFITS built this recreational plant at the Army's Fort Lewis, in Washington state. Supervised by the Seattle District, Corps of Engineers, the project included a football field and stadium, a baseball diamond and grandstand, with lights for night games, an enclosed swimming pool at lower extreme right, alterations and additions to the power plant and two parking areas. Building under construction is a $296,000 theater. The recreational program cost $500,000, available from Post Exchange profits.

Merrill lauds N. H. work; Morse fee being adjusted

Efforts are underway to adjust the only unsatisfactory aspect of New Hampshire's Portsmouth-Seabrook toll road job, Gen. Frank Merrill, highway commissioner said.

Merrill cited the excessive fee to Charles Morse, Haverhill, Mass., consulting engineer, as the only unsatisfactory aspect. He made it clear that the fee was unsatisfactory because Morse' costs had been less than anticipated.

Merrill's statement:

"The preliminary planning (on the $7,500,000 highway), done largely by the New Hampshire State Highway Department under the supervision of Mr. Dickinson (chief highway engineer who resigned, ENR Aug. 25, p. 14) was good. The contract plans issued for bidding, prepared by Parsons, Brinckerhoff, Hall and MacDonald with the assistance of Mr. Morse, have been entirely adequate for the prosecution of the work.

"Several top-notch contractors bid on the work, which was let all in one contract, and the low bidder, the Savin Construction Co., has pushed the work vigorously and most satisfactorily.

"John Morton, serving Parsons, Brinckerhoff, Hall and MacDonald as resident engineer, has done an outstanding job in supervising the construction and seeing that all the work and materials used on the job are of the best quality.

"One fault the state has to find with the project is that Mr. Morse' costs were very much less than anticipated on his fee for the work was therefore excessive.

"With an equitable adjustment of Morse' fee, the only unsatisfactory factor will be remedied and the Turnpike will be pushed to an early completion to give the state a facility of which the people can be proud. Efforts are being made to complete such an equitable arrangement."

◆

Award Chesapeake Bridge contracts despite suit

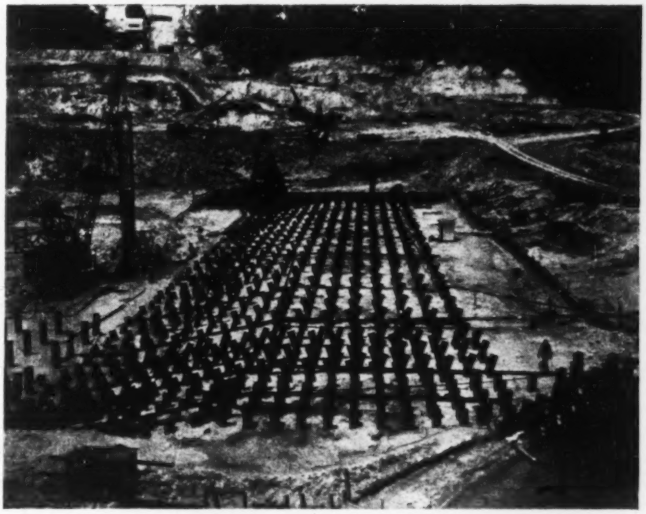
Contracts have been awarded for the substructure of the $41,000,000 Chesapeake Bay Bridge in the face of a suit to halt the project filed by a Baltimore City Councilman who has been fighting for a tunnel.

The awards, totalling $16,428,814, went to five contractors. Other contracts, for steel piling and forms, were awarded at the same time. State officials declared there is nothing unusual in awarding contracts in the face of an injunction action. The suit is aimed at allowing time for a determination of the cost of a tunnel connecting the points which would be linked by the bridge. The state was given 15 days in which to answer the suit. Its reply to the action is due this week.

Cost increases since the project was estimated originally will force the raising of additional capital if the project goes ahead as now planned. Extra funds are expected to be procured through the issuance of additional bonds. Securities in the amount of $37,500,000 were marketed a year ago. About $7,500,000 in new bonds probably will be required to provide a safe contingency fund, local observers believed, although some figured a $4,500,000 issue would be sufficient for the purpose.

Councilman Charles A. Masson's suit alleges that the decision to proceed with construction was based upon a "mistaken belief . . . that by constructing a bridge rather than a tunnel . . . approximately $8,000,000 could be saved." Masson said his request for tunnel bids had been refused by the state "improperly and illegally."

Masson still wants the state to advertise for tunnel bids so that a competitive comparison of costs for both bridge and tunnel may be had before proceeding with the work.



DRIVING 2,127 H-PILES into hard-packed clay for a concrete spillway foundation, the Corps of Engineers has Dam "B" well under way near Jasper, Tex. The $6,500,000 earth dam will store 94,200 acre-ft. of water behind a 6,867-ft. embankment, 45 ft. high. A $2,814,000 contract for the spillway and a section of the embankment was held by Reynolds & Williams and Noonan Construction Co. Richland Construction Co. did the first part of the embankment. The work is under direction of Lt. Col. Ellsworth I. Davis, Galveston district engineer.

Ralph Budd named head of Chicago Rapid Transit

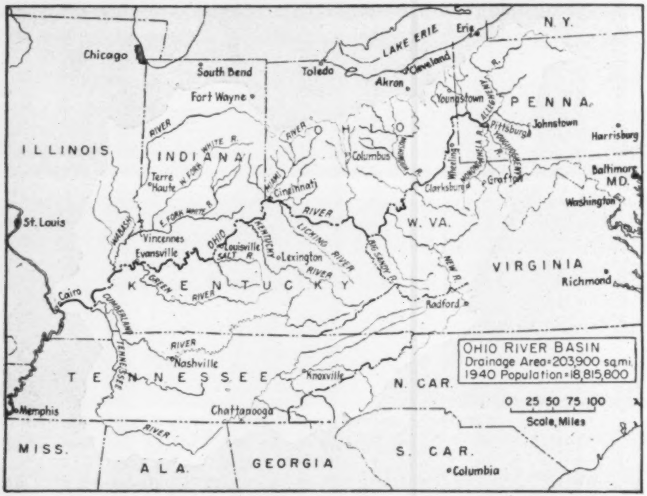
Ralph Budd, who retired as president of the Chicago, Burlington & Quincy R.R. Sept. 1, has been appointed chairman of the Chicago Rapid Transit Authority.

A civil engineer by training, Budd has the distinction of having served as head of two of the nation's large railroad systems, the Great Northern (1918-1932) and the C. B. & Q. (1932-1949).

He retired from the presidency of the Burlington at 70 years of age under a rule he had established some years ago.

Mr. Budd began his engineering career with the Chicago and Great Western in 1899. Five years later, his abilities were brought to the attention of John F. Stevens by J. L. Campbell, when he was in charge of an extension of the Rock Island. In 1906, Stevens took him to Panama, where he served until 1909 as chief engineer of the Panama Railroad. In that year, Stevens brought him back to this country to direct construction of the Oregon Short Line, which work put him into contact with James J. Hill. In 1913, Hill named Budd assistant to the president and chief engineer of the Great Northern. Five years later, he became president.

Pollution abatement laws surveyed


N. Y.
LAKE ERIE
Erie
Chicago
South Bend
Toledo
Cleveland
Akron
Fort Wayne
Youngstown
PENNA.
Johnstown
Harrisburg
Pittsburgh
ILLINOIS
INDIANA
OHIO
Columbus
Terre Haute
Cincinnati
Clarksburg
Grafton
Baltimore
MD.
Washington
St. Louis
Vincennes
Evansville
Louisville
Lexington
W. VA.
VIRGINIA
Richmond
Cairo
KENTUCKY
Radford
Nashville
TENNESSEE
Knoxville
N. CAR.
Memphis
Chattanooga
MISS.
ALA.
GEORGIA
S. CAR.
Columbia
RIVER
WABASH
WHITE R.
W. FORK
E. FORK WHITE R.
MIAMI
KENTUCKY
LICKING
BIG SANDY R.
NEW R.
MUSKINGUM
ALLEGHENY R.
MONONGAHELA R.
YOUGHIOGHENY
GREEN
SALT R.
CUMBERLAND
TENNESSEE
OHIO RIVER BASIN
Drainage Area=203,900 sq.mi.
1940 Population=18,815,800
0 25 50 75 100
Scale, Miles

EIGHT STATES are included in the Ohio River Valley Water Sanitation Commission, which is one of 11 efforts which are being made to abate stream pollution on a cooperative interstate basis.

(*Continued from page 23*)

stant back-stopping by the state departments of health.

As the laws and the agencies to administer them vary, so do the penalties.

Punishment for polluting state waters, after being ordered to cease, may be none, small fines, or fines up to $3,000 per day of violation and jail terms up to one year. The most frequent fine appears to be $100 per day of violation.

In only 17 states do qualified sanitary engineers administer whatever regulations exist. Either the head of the group or its executive secretary is a man with suitable technical background in these states. Other states report sanitary engineers (one or more) as being "on the staff." In two cases, a chemical engineer heads the regulatory group.

Effectiveness not uniform

Are present laws effective? Only 18 (of the 42 having some kind of a code) answered an unqualified "yes." Where legislation is new, respondents said frankly that it is too soon to tell. Others complained that a lack of funds hinders the group expected to fulfill the law's purpose. But most of the 24 not entirely satisfied point out that their laws simply lack teeth.

One state reports that it can collect fines but can't correct particular situations. In others, certain sources of serious pollution are exempt from the laws. Mississippi's law doesn't cover domestic wastes; West Virginia exempts the coal industry.

There are bright spots in the "effectiveness" picture. These show up in reports of laws requiring permits for all those discharging domestic or industrial wastes. Such permits must have the OK of the water pollution control group, and they give the state close control of stream conditions.

Two want no law

From two states where no pollution abatement laws exist come opinions that none are needed. Here, it is to be assumed that some legal machinery is available and adaptable in the infrequent and minor offenses that must certainly occur. The remaining five states admit the need for them.

Agitation by lobby groups is only slight in states where sanitary codes are needed, and practically non-existent in the many states where improvements admittedly should be made in existing codes. Only in Utah are public health officials making themselves heard by parties queried in this survey. Fishermen of Nebraska and Georgia are urging more stringent regulations, as are local interests in Minnesota and Missouri.

With or without the lobby activity, 28 state legislatures enacted, or at least considered, some sort of pollution abatement legislation this year. In five states, new proposals either died in committee or were defeated on the floor. But in the other 23 cases, new laws—or amendments to old laws—either have been signed or will be.

Along with their individual activities, several states have fostered, joined or are considering joining one or more of the many interstate groups formed in recent years.

Interstate compacts listed

At present, 24 states are cooperating in regional compacts to control conditions of streams running across or along state lines. These agreements vary in intent and effect, as do the individual state laws. While it was not the purpose of this study to complete an analysis of these agreements, they are worth noting as an indication of progress being made jointly.

In all, 11 formal interstate compacts and several informal agreements were noted by the survey.

They are:

New England Water Pollution Control Commission—Conn., Mass., R. I., and N. Y.

Interstate Sanitation Commission—N. Y., Conn. and N. J.

Interstate Commission on the Delaware Basin (INCODEL)—Del., N. J., N. Y., and Pa.

Ohio River Valley Water Sanitation Commission—Ohio, Ind., W. Va., N. Y., Ill., Ky., Pa., and Va.

Upper Mississippi River Board of Health Commissioners and Public Health Engineers—Wis., Mo., Ill., Minn., and Ind.

Upper Mississippi River Drainage Basin Sanitation Agreement—Minn., Iowa, Wis., Ill., and Mo.

Missouri River Basin Health Council—Mo., Mont., Minn., Colo., S. D., Nebr., Iowa, Wyo., and Kan.

Great Lakes Basin Sanitation Commission—N. Y., Minn., Ohio, Mich., Wis., Pa., Ind., and Ill.

Interstate Commission on the Potomac River Basin—Va., W. Va., Md., Pa., and the District of Columbia.

Red River Basin Sanitation Commission—Minn., N. D., and S. D.

Northwest Waterworks Pollution Control Council—Wash., Ore., and Idaho.

Among informal groupings:

Florida, Georgia and Alabama have plans afoot for cooperation on cleaning up the Apalachicola River. Illinois has a bi-state agreement with Missouri. Kansas and Nebraska are studying the Kansas River.

Vermont still is considering whether or not to join the New England group. Tennessee is ready to sign up with the eight states already represented on the Ohio River Valley Water Sanitation Commission, but only if North Carolina and Alabama will go in with them.

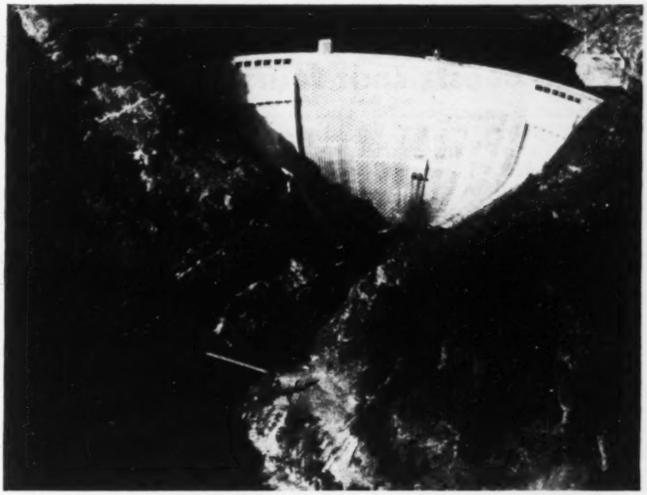
Reason for delay here is this: Tennessee is reluctant to submit to the rigid and effective regulations imposed by the eight-state compact for fear of losing any of its riparian industries to the neighboring states—Alabama and North Carolina—not yet bearing down on industrial waste offenders within their borders.

With this understandable difficulty overcome, membership in the Ohio River group may go to nine, or even 11 states.

Regional moves toward cleaner streams are not all brand new, but most of them have been formed or expanded since the war.

That progress is being made through interstate cooperation is an accepted fact. It is paradoxical, perhaps, that even some of the states without effective stream pollution abatement laws of their own have joined up with other states in their effort to prevent pollution of the country's major waterways.

◆



"NO OTHER DAM" can compare with Seattle's $28,000,000 Ross Dam for freedom from cracks, dryness and an estimated strength of 8,000 lb. psi. That's the proud boast of Herbert Faulkner, resident engineer during much of the construction of this 540-ft. high structure in the Skagit gorge. The dam, whose construction began in 1937, had an exceptional safety record. Without its own power plant, it still will gross enough, by helping downstream plants, to match its cost in less than six years.

Missouri gas tax ok'd, faces popular vote

Missouri's rural-roads-gas-tax program—already entangled with two social gains—appeared to be heading for a legal tangle this week. Opponents were circulating petitions to have it put on the 1950 general election ballot, while Governor Forrest Smith claims it is exempt from a vote.

The law doubles the existing two-cent tax on gasoline, with one cent of the increase earmarked for use on local county roads. (ENR Aug. 4, p. 26).

Governor Smith believes that the state constitution may exempt the measure he signed recently from a popular vote since it exempts measures "necessary for immediate preservation of public peace, health and safety."

The gas tax law, Smith says, is a "cure for school reorganization and rural medical problems." But he concedes that a state Supreme Court ruling would be necessary to bolster his opinion.

Meanwhile, the Automobile Club of Missouri, oil industry associations and truck and bus interests have indicated they will support petitions seeking to put the question on next year's ballot.

Taft support wins 75-cent pay floor

The 40-cent minimum wage, in effect for most industries since 1940, will rise to 75 cents around the first of the year.

This was assured last week when Administration Democrats, aided by Republican Leader Taft, went along with the 75-cent figure voted by the House Aug. 11 after fending off attempts of southern Democrats to hold the minimum to 65 cents or tie it to the cost of living.

Final action by Congress will have to await the decision of a joint conference committee, which will meet after the House resumes business Sept. 21.

Major differences concern the coverage of the 1938 law and the authority of the administrator to sue employers for wages due workers. There is also the question of effective date. The Senate would put the amendments into effect four months after they are signed by Truman; the House in two months.

The 75-cent minimum will raise the pay of about 1.5-million workers out of the 22-million now covered by the law, in addition to increases some employers will have to pay workers earning more than 75 cents in order to maintain existing differentials. Effect of the latter is not measurable.

To nail down the 75-cent minimum, a Democratic party pledge, Administration forces in Congress abandoned efforts to bring more workers under the law's benefits. Instead, they fought a delaying action on attempts to narrow the law's application.

They proved more successful in the Senate, where between 200,000 and 250,000 workers now covered were exempted. The House bill would apply the law for the first time to an additional 150,000 workers, but would deny it to some 1,160,000 now covered.

The conference committee is expected to lean toward the Senate bill, which is more favorable to the Administration's wishes.

◆

Troops Need Homes, Too—Twenty-two military establishments in Texas are seeking more new homes than have been built in the entire state during the past few years. President Avery Mays, of the Dallas Home Builders Association, says the military is seeking 32,785 new dwellings, which is a lot of homes even in Texas.

CONSTRUCTION BUSINESS

Wage boosts spur fourth Index rise

Construction costs rise for the fourth consecutive month as lumber prices stiffen, and scattered wage increases take effect. ENGINEERING NEWS-RECORD's Construction Cost Index for September is 479.78, up 0.5 points. The September ENR Building Cost Index is 351.92, a rise of 1.2 points.

Labor again is back of this rise, with skilled labor up 1.9 cents to $2.453 on the ENR 20-cities average. This accounts for the larger rise in the ENR Building Cost Index. Common labor rates went up only 0.8 cents on the average to $1.478. This affects the Construction cost index.

The effect on both indexes of the mixed situation in lumber prices is small. A net decrease of only 9 cents per M fbm holds both indexes down 0.1 of a point. While spotty increases show up this month in lumber prices in six cities these increases affect 2 x 4s only in Chicago and New York. In Chicago, Douglas fir went up $2 and pine prices held. In New York pine 2 x 4s went up $2.50 per M on pine, and fir prices held. Offsetting both, for a net decline in the 20-cities, lumber price average for 2 x 4s (on which the indexes are based), was a $4 per M price drop for Douglas fir 2 x 4s in Denver.

With its new September value of 479.78 the ENR Construction Cost Index is back within 0.43 points of its October, 1948 peak. It is 7.68 points higher than in May when the Shakedown in costs ended.

The ENR Building Cost Index at 351.92 for September is still 5.15 points below its October, 1948 top. It is only 3 points above May when the down trend ended.

California road prices decline 9.7% in year

California highway construction contract prices declined 9.7 percent between first-half 1948, and the second quarter of 1949, as measured by the cost index of the California State Highway Department, according to a report published in the July-August issue of California Highways and Public Works.

The California highway bid price index dropped from the 1948 high of 216.8 to 195.7 in the 2nd quarter of 1949. This index is based on 1940 = 100.

Credit for this decrease is given to these factors: (1) Increase in labor productivity, now estimated to be 90 percent of 1940, compared with 75 percent last year. (2) Materials prices decrease for the first time since 1940, and (3) Elimination of many elements of uncertainty.

Contract prices that show outstanding reductions include: Roadway excavation, down 23 percent from $0.56 to $0.43 per cubic yard. Class "B" Portland cement concrete pavement, down 12 percent, from $13.37 to $11.74 per cubic yard. Bar reinforcing steel, is down 12 percent, from $0.094 to $0.083 per pound, and structural steel, down 24 percent, from $0.145 to $0.110 per pound.

An analysis of contractor's costs for the first quarter of 1949 showed a significant trend in the proportions going for materials and labor. Labor costs declined from 45 to 33 percent of total costs, while materials gained from 27 to 37 percent.

The decline in highway bid prices slowed down in the second quarter of 1949. The California highway bid price index dropped 7.4 percent in the first quarter, only 2.4 percent in the second quarter. In appraising the significance of this trend in bid prices, and in considering also the June upturn of ENGINEERING NEWS-RECORD'S cost indexes, the authors "wonder if the recent decreases in construction costs, as based on contractors' bids, was not almost wholly due to "squeezing the water out" . . . with very little decrease in basic costs." The article concludes, ". . . . it is our opinion that costs will inevitably be held up and possibly increased, and that present inflationary trends will be continued until there is more definite stabilization of the national economy."

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Lumber market firmer

Reports from various parts of the country indicate a marked improvement in the lumber market during the last two weeks of July, according to the 73rd Quarterly Report of the Lumber Survey Committee to the Secretary of Commerce. The upswing in building and construction has been reflected in a steady increase of sales in the retail lumber yards.

Production in the second quarter was estimated at 8,122 million board feet, 16.5 percent above the first quarter, but 11.3 percent below the same quarter last year. Inventories which had increased nearly 40 percent in the four previous quarters, showed an increase of only 1.3 percent during the second quarter of 1949.

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Stamp book plan insures masons' vacation pay

A new device in labor-management negotiations is credited to the Mason Contractors Assn. of St. Louis and the bricklayers' union there.

It arose when a union-management arbitration board faced the problem of giving bricklayers paid vacations. That was complicated by the fact that bricklayers may have worked for several employers during the year. Under ordinary methods, this would pose an impossible bookkeeping problem, with 1,400 bricklayers involved. Yet management didn't like the only—until then—alternative. Unions, where unable to get vacation pay, had been boosting wage demands.

The answer was a stamp plan. With contractors required by the contract to lay aside an amount equal to 3 percent of the payroll for vacation pay, they buy stamps in 10-, 25-, 50-cent and $1 denominations from a St. Louis bank. When pay envelopes are made up, stamps equal to 3 percent of the earnings are enclosed.

The bricklayer keeps the stamps until the end of the vacation year, May 30. Then he cashes them, after his stamp book has been certified by a committee in charge of the plan, at the bank which sells the stamps to contractors. That makes vacation funds available to men who ordinarily don't save for holidays. The issuing bank does the bookkeeping for a 3 percent (of stamps sold) fee.

◆

Wage scales in 77 cities

Reports on union wage scales in the building trades in 77 cities are obtainable without charge from the Bureau of Labor Statistics, U. S. Dep't of Labor, Washington 25, D. C. The listings show July 1, 1949 union rates by trade as well as the weekly hours of work before overtime rates become effective.

◆

State highway work 5% under '48, reports BPR

Highway improvements costing approximately $647,485,000 reached the contract stage during the first seven months of this year, according to a report by the Bureau of Public Roads. This volume of highway construction is roughly 5.5 percent below that recorded during the same period last year.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 71, went to press.)

Veterans Hospital—Thompson & Street Co., Atlanta, Ga., has been awarded contract to construct Veterans Hospital, at Birmingham, Ala., by the U. S. Engineers, Mobile, Ala., at $5,887,000.

Grade Separation—Bureau of Contracts & Accounts, State of New York, Albany, will open bids Oct. 5 for Terrace Railroad Grade Separation in Buffalo, Erie County. The estimated cost is $4,500,000.

Power Plant—Central Illinois Light Co., Peoria, Ill., plans constructing power plant addition at Peoria at $8,500,000.

Schools—Duval County Board of Public Instruction, Jacksonville, Fla., will hold election Oct. 4 to vote on $12,000,000 bonds for schools.

Intercepting Sewers—East Bay Municipal Utility District, Oakland, Calif., rejected bids Aug. 24 for intercepting sewers. Peter Kiewit Sons, San Francisco, Calif., was low at $6,059,408.

Grain Elevator—Farmers Union Grain Terminal Assn., St. Paul, Minn., awarded contract for grain elevator addition to McKenzie-Hague-Simmons Co., Minneapolis, Minn. Estimated cost is $5,000,000.

Roads—Pennsylvania Highway Department, Harrisburg, Pa., received low bid on road in Lycoming County from George Vang, Inc., Pittsburgh, $2,464,455, and road in Berks County from C. W. Good, Inc., Lancaster, Pa., $1,774,159.

Hospital—Buffalo General Hospital, Buffalo, N. Y., awarded contract for additions and hospital alterations to George A. Fuller Co., New York, at estimated cost of $4,000,000. Crow, Lewis & Wick, New York, N. Y., are architects.

Public Housing—Public housing projects reported recently include 10,000 units proposed by Philadelphia Housing Authority, at various sites, not selected, to cost $80,000,000; Hartford Housing Authority, Hartford, Conn., plans 2,000 dwelling units at $16,000,000; Port Arthur Housing Authority, Port Arthur, Tex., plans 2 housing projects $1,550,000; New Orleans Housing Authority, New Orleans, La., plans 5,000 units at $43,750,000; Austin Housing Authority, Austin, Tex., plans 520 units at $4,550,000; Brownsville Housing Authority, Brownsville, Tex., 250 units at $2,187,500. Bids will be opened Sept. 23 for 150 units housing by the City of Medford Housing Authority, Medford, Mass., at $1,500,000; and bids will be opened Oct. 5 for 202 units by City of Lowell Housing Authority, Lowell, Mass., estimated at $2,900,000. City Planning Commission, Little Rock, Ark., plans 1,000 low cost housing units at $1,000,000.

Office—Herbert J. Freezer, New York, will build with plans by John Sloan & Associates, New York, 20-story office building for television industry at Broadway and 51st St. to cost $9,000,000.

Bridge—Ohio State Highway Department, Columbus, plans North Toledo Bridge, linking proposed North-South Highway in Toledo, O. Cost will be about $7,000,000. Howard Needles Tammen & Bergendoff, Kansas City, Mo., are consulting engineers.

Housing—George A. Poag & Associates, Fort Wayne, Ind., will build Anthony Wayne Village housing project with own forces, at about $2,000,000.

Water Supply—Municipality of Regina, Sask., plans river intake and pumping plant, 300 ft. pipe, 12 miles lined canal, and improving Qu' Appello River Channel to Buffalo Pond Lake; intake and pumping plant at Buffalo Pond Lake, treatment plant, 5 miles pipeline from lake to treatment plant and 34 miles pipeline to Regina. Estimated cost is $5,690,000.

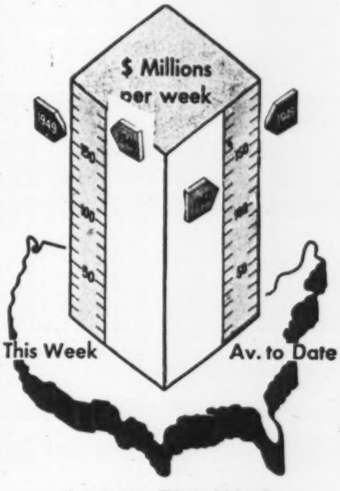
Pennsylvania Turnpike — Pennsylvania Turnpike Comn., Harrisburg, awarded contract for section of Turnpike in Chester County to C. J. Langenfelter Co., Baltimore, Md., $3,707,788; in Lancaster and Berks Counties to Loyalhanna Construction Co., Pittsburgh, $2,797,356; in Cumberland County to Frank Mashuda, Pittsburgh, $1,319,893, and in Dauphin County to Frank O. Patterson Construction Co., Monongahela, Pa., $1,849,199.

Apartments—Clifton Park Manor, Inc., Wilmington, Del., has final plans underway by A. D. Lueders, Arlington, Va., for apartment development $5,924,000; also apartment in Clifton Park $6,000,000, both at Wilmington.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost..	Sept. '49	479.78	230.63
Building Cost	Sept. '49	351.92	190.24
Volume	Aug. '49	352	152



Activity This Week

As reported to ENR
(in millions of dollars)

Amount of Contracts let

	Week of Sept. 15 1949	Cumulative 1949 (37 wks.)	1948 (38 wks.)	% chge av.wk.
Federal	$5.6	$790.6	$716.5	+13
State & Mun.	84.2	2,308.9	1,913.4	+24
Total Public	$89.8	$3,099.5	$2,629.9	+21
Total Private	66.2	2,719.0	2,418.0	+15
U. S. Total	**$156.0**	**$5,818.5**	**$5,047.9**	**+18**

Contracts by type of work

	This Week	Cumulative 1949 (37 wks.)	1948 (38 wks.)	% chge av.wk.
Waterworks.	$3.0	$156.9	$158.3	+2
Sewerage ..	7.0	190.7	161.9	+21
Bridges	23.9	244.4	208.0	+21
Highways ..	24.5	689.1	760.9	−7
Earthwork, Waterways.	3.9	420.7	379.5	+14
Buildings, Public	24.1	1,162.5	790.9	+51
Industrial .	15.6	759.3	703.0	+11
Commercial	42.8	1,645.3	1,396.7	+21
Unclassified .	11.2	549.7	488.7	+15

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (37 wks.)	1948 (38 wks.)	% chge av.wk.
NON-FEDERAL ...	$4,195.0	$3,388.0	+27
Corporate Securities	1.771.6	1,530.4	+19
State and Municipal	2,038.4	1,365.3	+53
U. N. Building Loan	....	65.0	...
Federal-Aid Highway	385.0	427.3	−7
Federal	621.8	1,558.9	−59
Total Capital	**$4,816.8**	**$4,946.9**	**0**

Running a Library for an Engineer's Office

Ruth Canavan
Librarian, Metcalf & Eddy
Boston, Mass.

An Engineering-Office Library, representing a considerable investment, is one of the invaluable behind-the-scenes elements of successful practice. Constantly consulted and relied upon by all members of the organization, it must be able to absorb increasing technical data and at the same time to produce needed information quickly. But the libarary must also be maintained and operated as inexpensively as possible consistent with good service.

To make reference material readily available to staff members, the Metcalf & Eddy library is located in the central portion of a large office space. It is flanked on one side by "partners' row" and on the other by the drafting room, with entrances at either end. Glass-front bookcases in double stacks, back to back, constitute the main portion of the libarary. Additional stacks are scattered through the office to take care of expansion.

A separate smaller library is located near the laboratory entrance for bacteriological and chemical books. Books in the "chemical library" are catalogued in the main card catalog.

Stack-plan directory

The stacks are numbered and as far as possible arranged consecutively. A framed stack plan with alphabetical directory hangs near the librarian's desk. The pasteboard back of the frame is removable so that notations may be made in the directory when a file is moved. This feature has proved very helpful because the problem of finding space requires much more frequent shifting of files than occurs in a larger libarary where expansion space is available.

Within the main libarary is the librarian's desk, the main card catalog, the library table, and chairs. Here are kept certain confidential reports, text books and reference books. The main library also serves as a conference room.

To facilitate self-service, material removed from shelves by staff members is not charged, but it may not be put inside desks or tables or be taken from the office.

If an exception is made to this rule and a book is to be taken home or into the field, a slip must be left in the library. There is a two-week limit on books borrowed.

Borrowing is not encouraged: The library is regarded essentially as an "office tool" and the books are for use in the office. In a few instances books have been duplicated to make them available to field men.

All material taken from the files is returned to open shelves marked "Return Shelf," for replacement solely by the librarian. Even with this rule, frequent checking of the files is necessary to replace material disarranged during use.

The most difficult problem in a small library is that of space. Provision for expansion is limited, which necessitates constant cutting down of material, storage, and frequent shifting of files. In the Metcalf & Eddy library, routine cuts are made in certain files, and "dead wood" is eliminated from others.

Obsolete data is stored in three locations. Before being moved from the library, all of this material is tagged and catalogued so that it remains readily accessible upon request.

Micro-films reduce space needs

To cut down storage space, about three thousand drawings have recently been microfilmed (Fig. 3). Consideration is now being given to the practicability of reproducing and filing specifications, basic computations, and reports in this way.

Two reproduction methods were considered—microfilming and microcarding. The cost of the microcard system did not seem justified although according to The Microcard Committee, Middletown, Conn., cards are more convenient to use and take up less space than films. The Microcard reading machine is more expensive than the microfilm projector, but it reads either cards or film, whereas the film projector will not read microcards.

A 3x5-in. microcard, which can be filed like a library card in a shallow drawer, will take 100 pages of a 6x8-in. book, or between 40 and 50 pages of 8½x11-in. printed matter. If it is desired merely to obtain one or two copies and not to reproduce in manifold, the microcard method is more expensive than the microfilm.

A 100-ft. roll of 35 mm. film, on the other hand, will take from 600 to 650 exposures of 2x3-ft. drawings or the equivalent. These rolls of film are ordered in duplicate. One roll (the negative) is kept in a fireproof vault, being used solely for reproduction; the other (the positive) is available for reviewing in a projector.

The portable projector weighs only 12 lb. (Fig. 4). The image may be thrown on a screen or a light-colored

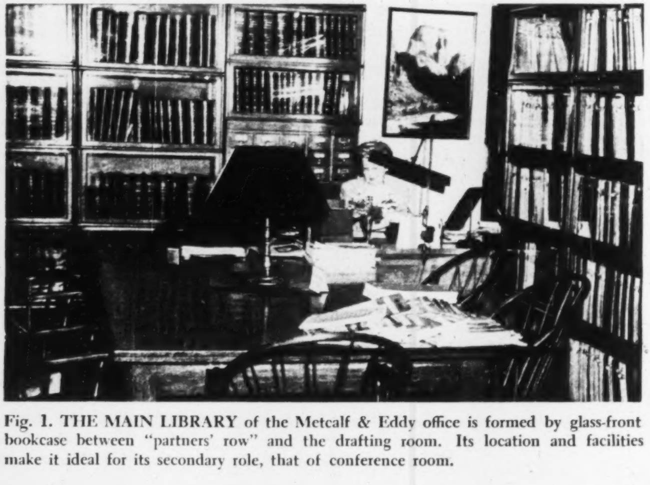


Fig. 1. THE MAIN LIBRARY of the Metcalf & Eddy office is formed by glass-front bookcase between "partners' row" and the drafting room. Its location and facilities make it ideal for its secondary role, that of conference room.

wall. It may be magnified or reduced according to the distance of the projector from the screen, a usual comfortable reading distance being 6½ ft.

The boxes for microfilm rolls are 4x4x1-in. in size and numbered consecutively on the ends.

To facilitate location of drawings on a roll during projection, 2x2-ft. sheets of drawing paper are inserted between each fifty drawings before they are sent for reproduction. These sheets bear the notation "1 to 50," "51 to 100," etc., as the case may be, throughout each roll. They also bear the significant portion of the inclusive catalog numbers (B-24 through C-180). These designations are made in well-defined bold type to stand out on the film when run through the projector.

Locating a microfilmed drawing

To locate a drawing on the microfilm, the card catalog of drawings is consulted. Each item, which has been microfilmed, is stamped with the word "microfilmed" and has a two-element notation added in red designating the roll number and the drawing location thereon (1 #250 denotes the 250th drawing on roll No. 1).

How data is classified

When the library was established in 1912, consideration was given to the advisability of a classified versus an alphabetical arrangement of the material, which was then comparatively small in quantity. After considerable study of then existing systems a classified method was evolved, which has proved satisfactory and efficient down the years. The main classification divisions are alphabetical—with various sections broken down into numerals and decimals. A typical breakdown is:

K WATER SUPPLY
  K9 Water Purification
    9.3 Rapid sand filtration
    .30 Design-general
    .300 Underdrain systems
    .301 Sand and gravel

After the classified system had been used for eighteen years, it was thought advisable to modify the original schedule to provide for changes in sanitary engineering practice whereby certain minor divisions had become of major importance. This alteration involved an undesirable amount of recataloguing with the consequent danger of missing many cross-references. It is important in adopting a classification schedule to make it not only as permanent as possible but also readily expandable.

A small library has to handle a greater variety of material than the large library, because all material requiring cataloguing finds its way to the librarian. This may include—in addition to textbooks and reports—maps, patents, photographs, and lantern slides, each type of data representing an individual problem with respect to housing and cataloguing.

Various types of technical material are classified as follows:

(1) **Textbooks** are arranged according to the various classifications and under each by author. They are carded by author, title, and subject. A shelf list with cards arranged according to the classifications is convenient for checking and for detecting material missing.

(2) **Reprints** are bound either in Gaylord multiplex binders or by using hinge-tape combined with a new product—"Mystik Self-Stik cloth tape" which comes in several widths and colors. Covers are cut from cardboard. Thin reprints which can be punched are included in the data file. Reprints of articles by staff members, for distribution, are filed in letter folders in drawer files. They are carded by author and title and identified by an accession number.

(3) **Computations** come to the library ready for binding and cataloguing. These are filed in specially-designed screw-post cardboard binders (Fig. 5) ordered in lots of one hundred. Back widths are ¼, ½, 1, and 1½ in. Gray cloth backing gives uniformity on the shelves and a background for the job and volume numbers by which these volumes are designated. They are catalogued by client and also in numerical order by job number in a separate card file. This file constitutes a shelf list and is necessary for detecting volumes missing or in use. When volumes from this file are stored, the new location is marked on

STACK DIRECTORY

Acts- Mass.	25	Handbooks	Dr.Rm.	Society Pubs.	39
Acts- Federal	26	Ind.& Eng.Chem.	43,ƒƒ	Specifications	
Am.City Mag.	*,40	Ind.Arts Index	2-3	Foreign	Steel Dr.
Am.Sew.Prac.	17,ƒ	Inspec.trips	***	M & E	27,43
Am.Soc.C.E.		Int.Eng.Cong.	38	State Reports	1,2,3,37,38
Trans.	40	Lantern slides	*	Sweets Cats.	Dr.Rm.
Proc.	*	Maps,pocket	*	Textbooks	3-8
Am.Soc.Mech.E.	*	Mass.Geod.Surv.	41	United States	
Am.Soc.Mun.Imp.	41	Membership lists	11	Agric.	38
Am.Soc.Test.Mat.	39	M&E reports	12-16,1	Army Engrs.	38
Am.Wa.Wks.A.	41	Duplicates	*	Census	22
Atlases	Upright & ƒ	Munic.Index	Dr.Rm.	Coast & Geod.	38
Bid Sheets	Cost file	Munic.San.	40	Eng.Abstracts	17
Boston Soc.C.E.	17	Natl.Bd.F.Und.	*	Federal bills	26
Card Catalog	11	Negatives	*	Federal specs.	22
Cat.for Catalogs	Dr.Rm.	N.E.W.W.A.	17	Fisheries	22
Catalogs	29,33-36,44	Opinions(bd.)	**	Geol.Survey	*38
Chem.Abstracts	42,**	" unbound	Steel dr.	Labor	22
City & Town rep.	18-21	Opinion file	***	Port Series	38
Civil Eng.	40	Periodicals	*	Public H.Abst.	17
Computations	24,30-32,	Photographs	*	" H.Service	38
	28,28a	" Mems.firm	***	Standards	22
Data file	Steel drs.	Prof.Work	ƒ	Tide Tables	38
Dictionaries		Pub.Health Ab.	17,**	Wa.Sup.Papers	22,23
Foreign	3	Public Works	17	Weather Bureau	43
Webster	Main Off.	Reprints	ƒƒ	WPA Poll.studies	42a
Eng.News	9	Return shelf	33-34	Water Wks.& Sew.	17
" " Index	38	Sears Roebuck	ƒ	Water Wks.Eng.	17
" News-Rec.	10-11	Sew.Wks.Jour.	39	World Almanac	ƒ
Eng.Record	9-10	Sew.& Sew.Disp.	17	University Pubs.	38
Geotechnique	41	Slides	*	Who's Who	4

*Coat room **Storage in Dr.Rm. ***Steel drs.Chase Rm. ƒLibrary ta
ƒƒBoylston St.Office

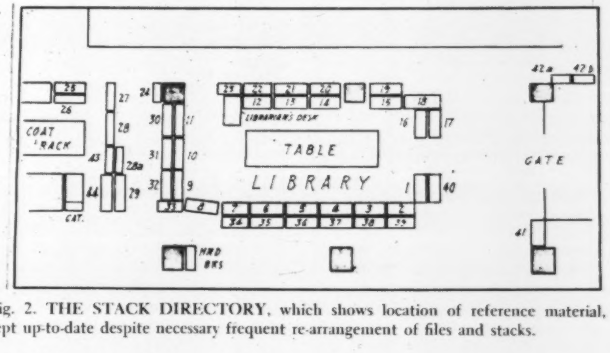


Fig. 2. THE STACK DIRECTORY, which shows location of reference material, is kept up-to-date despite necessary frequent re-arrangement of files and stacks.

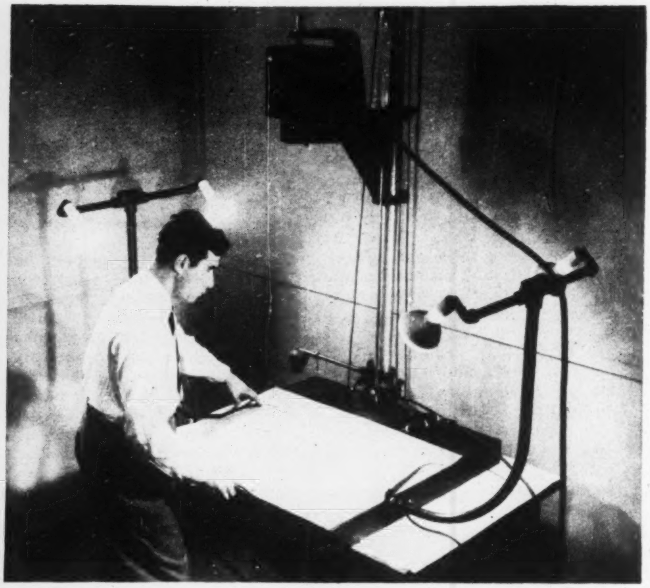


Fig. 3. MICROFILMING reduces storage-space needs. One 100-ft. roll of 35 mm. film will take 600-650 exposures of 2x3-ft. drawings. (Recordak Corp.)

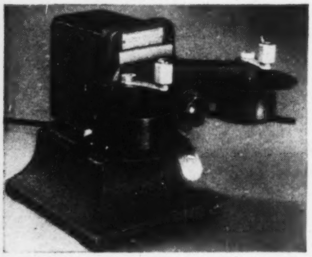


Fig. 4. MICROFILMED DRAWINGS are thrown by a small portable projector onto a screen or any light-colored wall for reading. (Recordak Corp.).

the cards in both files. When computations are brought back from storage for temporary use, a record is made so that, when a volume is missing, search may be made in the office starting with the man who is recorded as last having used it.

(4) **Reports to clients** are numbered consecutively and entered chronologically in a typewritten list. They are also catalogued in a separate card file by name of the client with liberal cross-referencing.

Experience has shown that it would be desirable to have a tie-up between the job number given the computations and the corresponding report, although frequently studies are made which do not result in a written report. These reports are regarded as confidential and are given out only with permission from a member of the firm.

(5) **Specifications.** One copy of each specification goes into a record file. This is arranged alphabetically by client and is correspondingly catalogued. Specifications received from outside sources are kept in a separate file, arranged and catalogued by source.

(6) **Periodicals and society journals** are, for the most part, bound when the volume becomes complete. In most instances it is necessary to apply for the index. Some magazines are kept in unbound form and a few are discarded at the end of the year. Periodicals are not circulated as a general rule, but are available in the library.

(7) **State and municipal documents** are kept in two separate files arranged alphabetically in glass-front cases. Each file has a card catalog. When this contains a great many cards for one place, cards are broken down by subject ("New York City-Sewerage," "New-York City-Water Supply"). Various methods have been tried for segregating the files of this material, including pamphlet boxes, binding and folders. Pamphlet boxes did not give ready enough access to documents, binding was a pitfall because many reports are discarded at intervals, and folders soon become shabby. The method finally adopted is to tie documents in sets with red tape. On the cards in the library file certain documents checked in red are kept up-to-date. This necessitates annual requests for the latest edition.

(8) **Federal government documents** are housed in glass-front cases by the department and bureau. They are carded by subject and also under "United States" broken down into departments and bureaus. As this material is frequently shifted, its location is designated merely by stack number. The same is true of periodical files.

(9) **Trade catalogs** are kept on twenty-seven open shelves and filed according to a classification which has been based on the main schedule but modified to accord with the inclusive character of many catalogs. For instance, "Pipe and Valves," which usually are contained in the same catalog, are classified in this file as "K 5.2" whereas each has its individual designation in the main schedule. Trade catalogs are carded by manufacturer, and trade-name cards are also generously interspersed through the catalog. This card is kept in the drafting room adjacent to the stacks of catalogs.

(10) **Patents** are filed chronologically in ring books by patent number. They are carded by patentee, assignee, and subject. These volumes are housed in drawer units. The carding is included in the main catalog in a section following a lead-card "Patents." The first portion of the cards is arranged by patentees, the second by subject. Assignees are carded with the patentees.

A small file of foreign patents, also in ring books, is arranged chronologically under the country, and carded with the United States patents.

(11) **Miscellaneous data and reprints** are bound in ring books and kept in sixteen drawers. From time to time "dead wood" is eliminated from this file. The material is classified in accordance with the general library schedule and so arranged in the drawers. Much of it is referenced in the main card catalog.

(12) **Photographs** are mounted in classified loose-leaf photograph albums. Originally photographs were filed in numbered albums with a card index. This was discontinued in favor of the more direct method afforded by classified albums. Within each classification, photographs are arranged alphabetically by client. The advantage of this method is that instead of being obliged to consult the card catalog and then the various volumes referenced, it is now only necessary to go

directly to the classification, within which all photographs on each piece of work are all grouped together.

Photographs of work under construction are filed either in an envelope bound in with the computations or, if voluminous, are placed in a "temporary" drawer file in legal-sized envelopes arranged alphabetically by the job, to be discarded at its conclusion.

Classified albums of photographs admit of almost limitless expansion. For instance, if there are three volumes under the classification "Sewage Disposal" running respectively from A to F, G to L, and M to Z, as material is added these volumes can be expanded into a fourth album without disarranging the order of the photographs already inserted.

For attaching the photographs to the album leaves, at one time drymounting tissue was used, requiring application by using a medium-hot electric iron. This method was abandoned because it required considerable skill and attention to prevent print scorching. The method of attaching corners was also abandoned, because they soon came off, and also the prints had a tendency to slip out. They are now mounted with rubber cement.

(13) **Negatives** are filed numerically in envelopes in shallow drawer files, and are carded by place or client.

(14) **Lantern Slides** are numbered chronologically and arranged consecutively in wooden slide boxes with the inclusive numbers on the ends of each box. They are entered in chronologically sequence on a typewritten list and also in a loose-leaf book arranged alphabetically by place or client.

When slides are removed for a lecture, a list is kept with notations of the occasion, date and lecturer, so that one lantern slide talk may serve as the basis for another on the same subject.

(15) **Reference books** comprise a very vital part of any library. These should include, in addition to professional and trade handbooks, dictionaries, atlases, almanacs, a good encyclopedia, Engineering Index or Industrial Arts Index, Engineering News and Engineering News-Record indexes, Municipal Index, U. S. Public Health Service Abstracts, Chemical Abstracts, several volumes of the various Who's Who, Sweet's Engineering and Architectural catalogs, and some commerical directory such as Thompson's.

Some additional suggestions

It has been found advantageous to pile out-of-size books flat at the end of the section in which they belong, rather than removing them to a separate location. These books are designated "FLAT" on the cards in the catalog. This does not apply to the trade catalogs, however, because the large-sized publications have been removed from this file from time to time to afford additional space. In this case they are segregated.

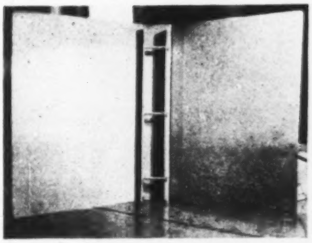


Fig. 5. **A SCREW-POST BINDER with cardboard covers is a convenient method for filing engineering computations.**

The catalog file has also the peculiarity that it is kept up-to-date automatically by requests from the men direct to the manufacturers when they are in need of the most recent material. This apparently strange procedure has been justified in that it ensures that the men get the most recent information rather than obsolete data. Frequently some one on the staff notes something new announced in the periodicals, which the library obtains. New editions of bulletins and catalogs are issued so irregularly that one ten years old may be the latest in one instance, whereas a bulletin with prices issued ten days ago may be already out-of-date.

Dust is always a library problem. Some modern buildings have vacuum tubes installed in the walls into which hose may be plugged. This removes the "top dust." But hand-dusting is still the most efficient method. A short-handled duster with yarn fibres at the end is an excellent tool for keeping down dust, especially in an open-shelf catalog file.

One very important service of the librarian in a small library is to become familiar with the resources of neighboring libraries and to establish friendly relations with other librarians so that cooperation with respect to an interchange of library loans may be secured. Membership in Special Libraries Association affords the opportunity of viewing methods used in other libraries. It also offers evening courses whereby practicing librarians may supplement their training. These include book binding, cataloguing and use of reference books.

It is assumed that a trained librarian will be engaged to organize the special library. If an untrained person is assigned to this task, there are two standard features of cataloguing that should not be overlooked: (1) placing on the back of each author card, in brief, all other references under which the book is being carded, thus ensuring that all cards will be caught when material is recatalogued or discarded; (2) deciding upon subject headings with lead cards, such as "Public Health," whereby all cards pertaining to this subject will be grouped together with cross-referencing from such headings as "Hygiene," "Epidemics." There are published lists of such subject headings, or the practice of Engineering Index or Industrial Arts Index may be followed.

In conducting a library on this basis of "everybody help himself," emphasis must be placed on "Foolproof finding." Staff engineers are unfamiliar with Cutter's "Rules for a Dictionary Catalog." Their fingers are unaccustomed to separating the clinging cards of the catalog files. They expect to find New York following Newport and South Essex following Southborough. And then there are always the evasive Macs and Saints to plague them.

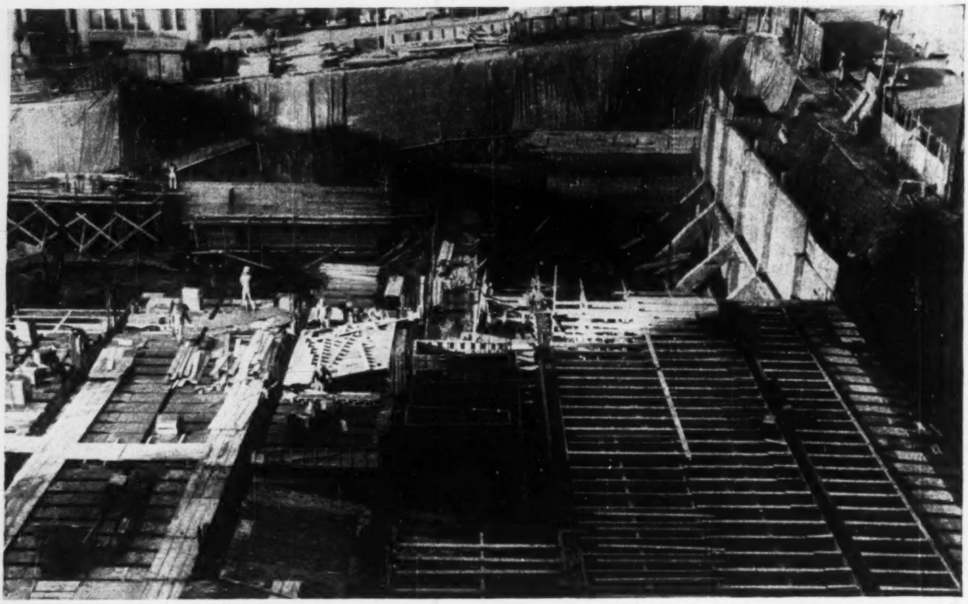
An established system of methods and rules is necessary even in the case of a small library, and it is largely up to the librarian to make of this a helpful aid rather than a baleful bugbear. It is surprising, and very much to the credit of the engineer, with what forebearance and ability the men adapt themselves to the requirements of the library and to its "eccentricities." It is essential to make everything in the files readily accessible not only upon request to the librarian but also to the men themselves.

Community Play Spending Found Doubled in Year

Communities have been spending 81 percent more for recreation facilities over the last two years than they did previously, the American Public Works Association reports.

Last year, APWA found, 1,917 communities spent $93,800,000 on recreation facilities and service, a figure double that of any previous year. Capital expenditures for land, buildings and improvement, were $30,000,000 —140 percent ahead of the previous record year of 1930.

These programs have been financed overwhelmingly by state, county or local funds—88 percent—in the form of appropriations, taxes or bond issues, APWA's survey disclosed.



Foundation walls for a Seattle building were braced by inclined struts as . . . .

Tarpaulins Keep Clay Bank Dry and Safe

Homer M. Hadley
Consulting Engineer
Seattle, Wash.

AN UNCONVENTIONAL "waterproofing" job over clay embankments, to prevent dangerous sliding, has made possible economical construction of foundation walls for a Seattle building.

Very firm when dry, the embankment consists of clay containing embedded coarse gravel and layers of sand and gravel. Once wetted, it is extremely treacherous and unstable and slides readily.

The contractor, in effect, waterproofed the entire embankment by covering the upstanding clay bank with tarpaulins and sealing joints and cracks in the adjoining sidewalks and entire street pavement with asphalt. This eliminated heavy bracing of the embankment.

Located 40 ft. below the busiest street in Seattle, Wash., the foundation for the city's new Public Safety Building was built during the rainy winter months, but there was no interruption of heavy street traffic because of sliding embankments dropping the pavement above.

The street in question, Fourth Ave., is somewhat like Park Ave. in New York in that a rail line runs underneath it. Its center line and the center line of the double-track Great Northern Railroad tunnel are identical. Depth of the tunnel below street surface varies from 50.2 ft. to 64.1 ft. in the block occupied by the Public Safety Building (that's depth to the tunnel crown, the tracks are 25.8 ft. lower down).

The bottom of the building's lowest footing along Fourth Ave. is almost 20 ft. above the top of the tunnel. Because of the firm character of the ground the tunnel is not expected to in any way affect the stability of the building.

Foundation wall design

The foundation wall is designed as a vertical slab of 3 spans for which the floors of the building serve as the supports or horizontal thrust members. Before these floors could be constructed, however, it was necessary that the wall be in place and functioning and all adjacent excavation be completed. Inasmuch as this portion of the building is occupied by a 300-car garage, inclined struts in the plane of the columns were introduced at the column lines and horizontal beams spanning from pier to pier—needed during the construction period only—were introduced at the floor levels.

These inclined struts along the 238-ft. frontage are spaced on 24-ft. centers except for one 21-ft. 9-in. bay and two 17-ft. bays. The diagonal struts are on a 45-deg. angle and they intersect the vertical piers 10 ft. above the level of the lowest floor.

Suggested construction sequence

It was imperative that there be no interference or interruption of Fourth Ave. traffic during construction and that meant that the ground beneath the pavement and sidewalk had to be kept thoroughly dry. Specifications suggested, as a possible method of constructing the wall, that the excavation be brought as close to the property line as was deemed safe and then the wall and inclined struts be built in the trenches which could be lagged and cross-strutted. After this were done the wall, horizontal beams, counterforts and diagonal struts would be capable of holding the bank independently and the remaining material could be excavated.

Method finally used

Naturally a less costly method was of great interest to the contractor. When the site was cleared of old buildings, an existing concrete basement wall, about 60 ft. long and about 12 ft. high, was left in place on the property line adjoining the corner of Fourth Ave. and James St. Excavation made directly beneath it was in firm, hard material and the old concrete wall remained in place. Then excavation was carried down further and then to final level and still the old wall stood. Then inclined struts were installed and the new wall poured up to the bottom of the old one, which was then removed. Meanwhile, and as a result of recent experiences and a now keen appreciation of the value of dry banks, the contractor had sealed all joints and cracks in the Fourth Ave. pavement with asphalt, sealed the curb with a rounded asphaltic gutter, and similarly sealed the sidewalk.

Success at the lower end of the wall indicated the propriety of proceeding on this basis and the entire bank was excavated so that it stood almost vertical at the property line. At one point, a short length of sidewalk, about 6 ft. wide, dropped into the pit but that was the sole loss. The large canvas tarpaulins were hung down from the top of the bank, protecting the top half or more of the bank and all pavement joints were periodically checked and resealed.

With these several precautions the bank was maintained in a dry state. The sealed concrete pavement and sidewalk and the buildings on the opposite side of the street prevented the entrance of water there and the tarpaulins kept dry the particularly vulnerable top of the bank. The contractor was therefore able to pour this wall having a maximum height of 43 ft. with the bank standing vertical and unsupported and with the heaviest traffic street in downtown Seattle only 12 ft. away. Similar methods were used on the side streets.

Largest post-war building

The Public Safety Building is Seattle's largest postwar building construction job. It will house the police and health departments of the city of Seattle. To be built of reinforced concrete it will include a 17-story tower and an 8-story portion along the 238-ft. frontage of Third Ave. The portion along Fourth Ave. will contain a garage below street level with much of the Fourth Ave. frontage being a plaza and entryway for the auditorium section of the building. The auditorium will be used for departmental meetings and lectures and will seat 272 people.

Work on the Public Safety Building is under the direction of John B. Cain, Superintendent of Buildings for Seattle. Associated architects on the work are Naramore, Bain, Brady & Johanson; Young & Richardson; and B. Marcus Priteca. The author is structural engineer.

The building is being constructed under a $3,354,091 contract by Kuney Johnson Co., Seattle, Wash.

New Hangar Has a Giant 45-Ton Door

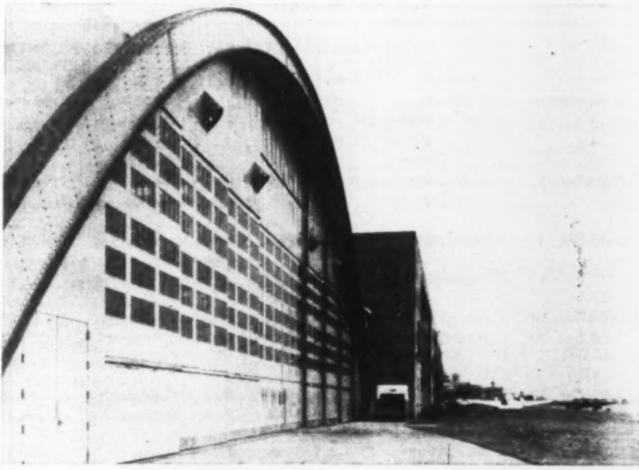
The 8-panel, 176-ft. door of the new No. 7 hangar at the National Airport weighs 45 tons. But it was designed, mounted and hung with such precision that by leaning his weight against one of the center portals a man can open it without heavy exertion.

The latter has been done only as a test, however, since an electrically powered mechanism opens and shuts the giant doors. Each center panel carries a platform on which the operator rides as the doors slide along the four-rail tracks. All panels are 30 ft. high and above them a hinged section 40-ft. wide can be lifted to give another 10-ft. height.

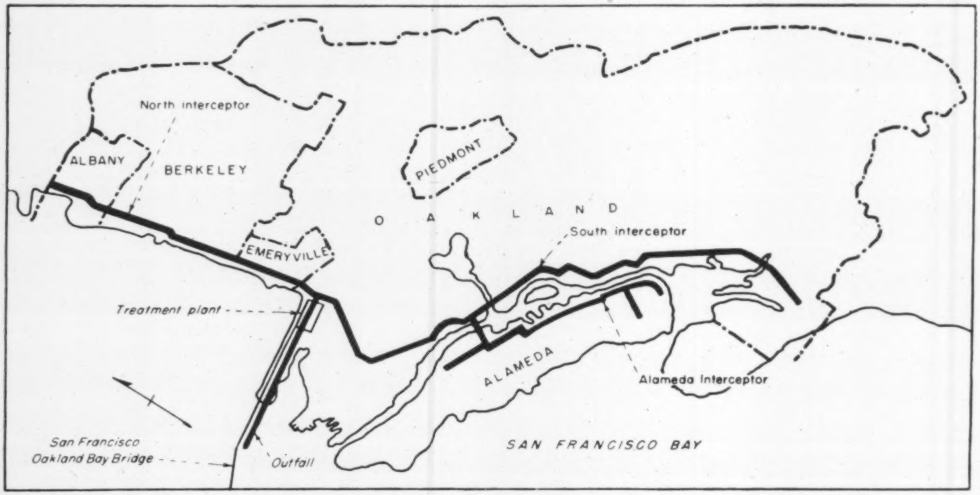
Doors are made of steel and glass and can be opened to full span in about two minutes. Cables interconnect the panel sections through adjustable spring-loaded sheaves on the back. Flanking the doors is an operating cable tensioning device.

Hangar No. 7 is an arch-type structure of reinforced concrete and steel with insulated roof with a large expanse of glass. Its overall dimensions are 283 x 213 ft. and it provides hangar space of 244 x 170 ft., with a height of 51 ft. Illumination is by incandescent lights and each lighting unit can be lowered to floor level by cable. The building contains offices, workrooms and storage facilities. It has been leased to American Airlines.

Number 7 is one of five new hangars which the Public Buildings Administration engineers designed and built as agent of the CAA. The other hangars (nos. 8, 9, 11 and 12) have doors of the lift type supported by heavy installations of steel work overhead. The hangars were recently completed at Gravelly Point, Va., just outside Washington. The Dyker Building Co., Inc. of New York had the general building contract. (**ENR** Oct. 23, 1947, p. 565).



ELECTRICALLY POWERED 45-ton door of new hangar can be slid open in two minutes. Older hangars at field have lift-type doors.


North interceptor
ALBANY
BERKELEY
PIEDMONT
O A K L A N D
South interceptor
EMERYVILLE
Treatment plant
ALAMEDA
Alameda Interceptor
San Francisco Oakland Bay Bridge
Outfall
SAN FRANCISCO BAY

THREE MAIN INTERCEPTORS will replace numerous raw sewage outfalls on the east side of San Francisco Bay.

Interceptors Come First In California Sewage Plan

INTERCEPTING SEWERS, now being built along the eastern shore of San Francisco Bay, are the first visible step taken to remedy serious pollution of east bay waters.

These interceptors are part of a $23,500,000 program of sewerage and sewage treatment for six bay-side cities: Oakland, Alameda, Berkeley, Albany, Emeryville and Piedmont.

The program will include 20 mi. of intercepting sewers together with the necessary pumping plants, a 15,000-ft. outfall extending 5,900-ft. into the bay, and a 105-mgd. (average flow)

TABLE I—EAST BAY INTERCEPTORS CONTRACT DATA

Interceptor	Date of Award	Completion Date	Contractor	Amount	Pipe Sizes (I.D.-in.)	Lengths (ft.)	Remarks
North Sec. 2	Feb. 1948	Feb. 28, 1949	Elmer J. Freethy	213,752.30	42	909	Installation only
					48	4,813	
					54	1,005	
North Sec. 3	June 1948	Sept., 1949	Healy Tibbits	351,869.00	30	160	Installation only
			Construction Co.		54	550	
					66	6,380	
North Sec. 4	Dec. 1948	April 7, 1950	Stolte Inc. & United	1,435,160.00	66	5,100	Furnish & Install
			Pipe Corp.		84	2,700	
					66	150	Tunnel
					84	840	Tunnel
South Sec. 1A	Feb. 1949	May 16, 1949	McGuire & Hester	64,611.50	42	1,870	Installation only
South Sec. 2A	Aug. 1948	May 9, 1949	McGuire & Hester	243,805.55	48	2,150	Installation only
					57	1,008	
					63	4,184	
South Sec. 2B	June 1948	Dec. 21, 1948	P. & J. Artukovich	62,368.50	66	1,600	Installation only
South Sec. 3	Mar. 1948	Sept. 20, 1948	P. & J. Artukovich	169,369.00	66	840	Installation only
					78	2,356	
South Sec. 4	Nov. 1948	Oct. 1, 1949	Healy Tibbitts	579,793.50	48	106	Installation only
			Construction Co.		78	2,761	
					84	2,788	

primary treatment plant.

Construction of interceptors has been underway for well over a year. However, planning for this project has been in process since 1936. This article is intended to cover the project development and the interceptor construction. Other portions of the work will be described subsequently.

Interceptors supported on concrete cradles

The interceptor sewers include concrete pipe varying from 18-in. to 108-in. i.d. Joints are plain bell-and-spigot on gravity lines and double rubber-gasket on the pressure lines. All pipe on interceptor contracts awarded to date has been cast centrifugally in 8-ft. lengths. In fact the same pipe manufacturer, American Pipe and Construction Co., has been low bidder on all contracts for supplying pipe.

Concrete in the pipe and in all structures is made of Type II cement with a calcined reactive siliceous admixture. This will give the resulting concrete greater density (less permeable) and thus, make it more resistant to deterioration as result of sewage and sewer gas. This resistivity was confirmed by a year-long testing program at the University of California. The concrete will also resist deterioration due to chemical reaction with the surrounding soil.

To maintain line and grade in these 6- to 27-ft. deep trenches, a continuous cradle is being installed to support the pipe. In such case, a 12-in. layer of crushed rock is first spread on the bottom of the trench. Then precast concrete blocks are installed and the pipe accurately positioned on top of these. Finally the cradle is cast to a depth of 12 in. below the pipe and 9 in. on each side of the pipe up to the springline.

Where the sub-grade gives poor support, a pile foundation is used Bents of two piles each are spaced at 4-ft. centers. The layer of crushed rock is placed around these, and a 12-in. thick continuous concrete mat cast over the pile. This mat is reinforced and is 9-in. wider than the outside diameter of the pipe. The pipe is then laid on this foundation and the concrete cradle installed.

Joints in the gravity lines are either gunited or hand-plastered on the outside and dry-packed and pointed by hand on the inside.

When completed the sewer lines must have no perceptible leakage. They are also subject to a 24-hr. infiltration test with the maximum being 500 gal. per inch of interior diameter per mile of pipe during two

TABLE II—EAST BAY INTERCEPTORS WORK YET TO BE CONTRACTED

Interceptor	Pipe Sizes (I.D.-in.)	Lengths (ft.)	Remarks
North Sec. 1	24	5,100	Force Main
South Sec. 1	12	2,750	Force Main
	42	2,760	
	51	885	
	63	7,230	
South Sec. 5	84	1,731	
	96	1,164	
	108	9,138	
South Sec. 6	108	9,926	
Alameda	18	1,885	Vitrified Clay
	18	2,465	Pressure Conduit
	48	3,300	
	51	12,680	
	57	3,200	
	48	2,100	Siphon Estuary Crossing
	96	700	Siphon

TABLE III—EAST BAY INTERCEPTORS PUMPING PLANT DATA

Plant	Location	Interceptor Capacity (gpm)	Number of Pumps	Pump Capacity	Discharge (in.)
Airport	South Interceptor	1,075	2	750	12
Fruitvale	South Interceptor	42,300	4	16,000	48
Krusi	Alameda Interceptor	10,900	3	5,750	30
Feenside	Alameda Interceptor	3,100	3	1,600	18
Oak St.	Alameda Interceptor	225	#		
Atlantic Ave.	Alameda Interceptor	7,200	#		
Grand St.	Alameda Interceptor	1,350	#		
Albany	North Interceptor	7,250	#		
Main	Treatment Plant	189,000	5	47,500	42 (5 Lines)
Effluent	Treatment Plant	202,000	4	70,000	54 (4 Lines)

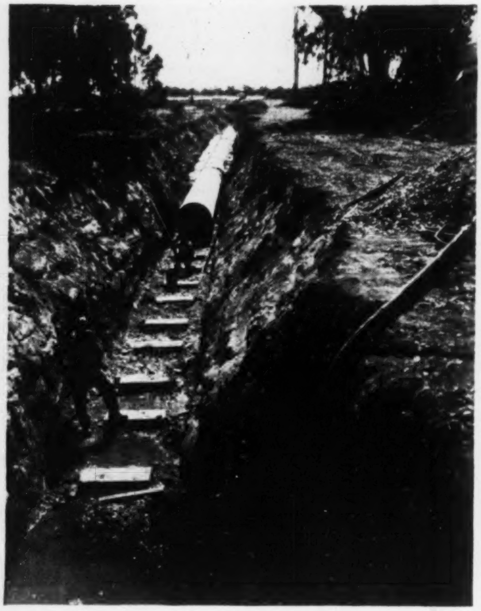
Each plant includes one spare pumping unit except at Airport plant.

Design underway.

TABLE IV—EAST BAY INTERCEPTORS AVERAGE UNIT PRICES

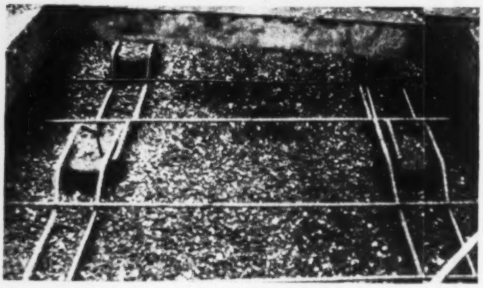
Item	Quantity*	Total Cost	No. of Contracts	Weighted Average Unit Price
Trench excav. (cu. yd.)	198,957.63	$1,082,095.43	8	$5.44
Structural excav. (cu. yd.)	3,159.25	35,328.41	8	11.18
Backful & Compact (cu. yd.)	128,282.20	213,515.83	8	1.66
Furnish Imported Backfill (cu. yd.)	52,810.09	134,097.53	8	2.54
Furn. & Inst. Under drain Sys. (lin. ft.)	39,875.26	108,887.20	8	2.73
Inst. 42" I.D. pipe (lin. ft.)	2,777.08	9,747.70	2	3.51
Inst. 48" I.D. pipe (lin. ft.)	7,051.05	22,212.13	3	3.15
Inst. 54" I.D. pipe (lin. ft.)	1,549.05	5,997.44	2	3.87
Inst. 57" I.D. pipe (lin. ft.)	1,008.00	3,326.40	1	3.30
Inst. 63" I.D. pipe (lin. ft.)	4,224.23	15,243.44	2	3.61
Inst. 66" I.D. pipe (lin. ft.)	8,157.05	46,276.73	2	5.67
Inst. 78" I.D. pipe (lin. ft.)	5,298.12	36,042.16	2	6.80
Inst. 84" I.D. pipe (lin. ft.)	2,788.00	26,486.00	1	9.50
Inst. flexible joints (ea.)	122	4,344.00	8	35.61
Furn. & Inst. Class "A" concrete (cu. yd.)	1,712.98	149,290.56	8	87.15
Furn. & Inst. Class "B" concrete (cu. yd.)	21,170.84	334,686.00	8	15.81
Furn. Portland cement (bbl.)	23,262.72	90,252.18	8	3.88
Furn. & Place reinf. Steel (lb.)	368,731.00	48,961.55	8	0.13
Furn. cal. react. sil. mat. (cwt.)	7,546.00	12,292.00	3	1.63
Furn. timber piling (lin. ft.)	118,360.00	51,770.00	3	0.44
Inst. timber piling (lin. ft.)	118,360.00	51,676.00	3	0.44
Furn. & Inst. timber piling (lin. ft.)	12,969.30	23,883.95	2	1.84
Replace bit. pavement (sq. yd.)	15,750.61	49,630.22	6	3.15
Total		$2,556,042.86		

* Includes actual quantities for completed contracts and estimated quantities for uncompleted contracts.



PIPE was laid on concrete block set in a 12-in. layer of gravel on the trench bottom.

A CONCRETE cradle was later cast around the pipe to assure maintenance of line and grade on the flap slopes.



WHERE ground conditions were poor, piles were driven and a 12-in. concrete pile cap was placed on graded gravel.

24-hr. periods. No leakage has been evident to date, and no tests have been required by district officials.

Much of the material excavated from the trenches has been a sticky gumbo that swells with moisture. This material, almost without exception, has been wasted and the pipe back-filled with an imported cohesionless material (usually sand). The purpose of such backfill is to assure consolidation of the backfill and thus protect the pipe and any structures or paving above.

All connections with the 50 existing sewer outfalls are being made at structures, i.e. manholes, etc. These are built as the work progresses with plugs separating the interceptors and the existing outfalls. When the interceptors are placed in service, these plugs will be removed and the outfalls plugged up.

Pump parts interchangeable

Pumps in each of the various pumping plants will be uniform. Therefore operation of pumps can be rotated for equal wear, and replacement of parts will be simplified. All pumping plants will be fully automatic and some of the motors in some of the plants will be capable of two speeds to allow greater flexibility of operation.

The interceptors will empty through a subaqueous outfall into a 45-ft. deep bay channel. All of the interceptor and outfall work is scheduled to be completed by late in 1950. The sewage treatment plant will probably not be placed in operation until late in 1951. However, the outfalls and interceptors will be put in operation as soon as completed. Overflow structures are being provided at various points on the interceptors so that if a power failure should occur at one of the pumping plants, sewage would discharge into the bay.

Sludge accumulations on the mud flats will, it is believed, oxidize in less than 6 months after first use of the outfall. Tidal action churns this sludge, exposing it to air and when no new sludge is added, oxidation should be relatively swift.

Tunneling problems

Two parts of the interceptors require special construction consideration. The north interceptor must pass under the traffic distribution structure of the San Francisco-Oakland Bay Bridge. This structure includes a system of ramps and exchanges with a double-track interurban electric rail line passing under the structure. This rail line is carried in a depressed reinforced-concrete box structure supported on piles.

The interceptor was placed under this structure by first tunneling through the heavy clay, meanwhile supporting the tunnel by bolted tunnel liner plates, and inserting the sewer pipes. Concrete then completely encased the pipe.

Two pile bents that supported the electric rail subway had to be removed in the tunneling process. To replace these bents a 78x40-in. reinforced concrete beam with a 55½ ft. span was run under the subway and over the sewer line, supported on each end by a cluster of four piles.

Another section of interest will be the crossing of the Oakland Estuary between Alameda and Oakland. This will be a siphon crossing and two 48-in. lines will probably be used. The channel is dredged to hard material for navigation purposes. To provide the required 42 ft. clearance below MLLW, the sewer lines will probably be buried in this hard material.

J. S. Longwell, chief engineer and general manager of the East Bay Municipal Utility District, is in general charge of the entire project. R. C. Kennedy, assistant chief and assistant general manager, is in charge of the civil engineering design features and is the coordinator for the sewage disposal project. His principal assistant for this work is Darrell Root, supervising civil engineer. H. A. Knudsen, mechanical and electrical engineer, has charge of mechanical and electrical design and is assisted by O. B. Ackerley, Jr. J. D. DeCosta, manager of the water distribution division, is in charge of all construction, assisted by W. R. McLean, supervising civil engineer.

History of EBMUD Project

At about the time that the San Francisco-Oakland Bay Bridge was opened for vehicular traffic on Nov. 12, 1936, the East Shore Highway also went into service. This highway follows the bay along an area of relatively shallow mud flats. A thick blanket of sludge covers these mud flats because of the many sewer outfalls and unfavorable tidal conditions. At low tide, the odor is almost overpowering.

Realizing the pollution hazard and spurred by public demand, a joint cooperative committee of city engineers was formed. This included representatives of the six cities already mentioned, plus the city engineers of Richmond and San Leandro.

The committee retained a board of consultants consisting of Charles G. Hyde, H. F. Gray and A. M. Rawn, who made a report dated June 30, 1941. This report recommended a unified plan of action and suggested that the East Bay Municipal Utility District, which supplies water for cities and unincorporated areas in Alameda and Contra Costa counties, would be well suited to administer the sewage works program.

Subsequently, the state legislature passed a special enabling act, and at the November 1944 election Special District No. 1 of EBMUD was formed. This district includes only the six cities originally named, all in Alameda County. Richmond was ruled out (as were other Contra Costa County cities) because the state legislation did not permit the crossing of county lines for sewage works. San Leandro, on the fringe of the six cities, chose to construct separate works. Under the direction of the existing administering engineers of EBMUD, a staff recruited for special District No. 1 began preliminary design studies. Samuel A. Greeley was retained as consultant.

Subsequently a board of review including Samuel A. Greeley, Clyde C. Kennedy, and N. T. Veatch was retained to review the detailed design studies. This board, in a report dated June 5, 1946, recommended the system of interceptors, outfall and treatment plants now under construction and estimated the cost at $23,500,000. Accordingly, a bond issue for that amount was placed before the voters at the November 1946 election and was passed.

Special District No. 1 is empowered only to construct main trunk interceptors together with treatment and disposal works. All regular sewers are provided by the cities involved.

Some of the existing sewer systems were handling combined wastes, i.e., both domestic and industrial sewage and storm runoff. All of the cities involved will provide separate sewage and storm drain systems. Some of this has been done. The remaining sections will be separated gradually. This is possible because extra capacity is available in both the interceptors and the treatment plant. The interceptors are designed for year 2,000 loading whereas the treatment plant is being constructed for 1970 loading (105 mgd.). The plant is laid out and space is available for year 2,000 loading (291 mgd.). However, construction of the extra capacity is being deferred until needed.

Large industrial loads are each the basis of individual study. Where heavy organic content is involved that requires treatment, the district will handle it after certain pretreatment.

The area served by the district all has natural drainage into San Francisco Bay. One city, Alameda is on a flat bay side island. The rest of the area involves a strip of relatively flat land (from ½ to 2-mi. wide) at the bay front, ranging up to relatively high hills. Total population is estimated at 650,000.

With the foregoing conditions to be met, the system devised involves three bay-front interceptors all draining to a central treatment plant. Because the bay shore is flat, pumping plants are used to keep trench excavation to a reasonable depth. Thus some of the lines are under pressure and others subject only to gravity flow.

Australian Engineers Win Separate Recognition

The Association of Professional Engineers, Australia, is now a recognized body representing professional engineering employees as professional men. It has been granted the right to appear before the Australian Arbitration Court in matters relating to the salaries and working conditions of professional engineers throughout the country.

Formed in 1947 after being endorsed by the Council of The Institution of Engineers, Australia, the association was recognized as an "organization of employees" with the rights described above, in 1948. Prime aim of the organization is to improve the remuneration, working conditions and status of professional engineering employees and to maintain them at a level consistent with the requirements of professional men. The association has taken its definition of "professional employee" from the National Labor Relations Act (1947) of the U. S. A.

The association is the only commonwealth-wide organization representing employee professional engineers, industrially, as members of their profession. Membership at present is 500. Further additions are expected from the 2,000 professional engineers in Australia not belonging to any of the single-industry associations. These latter have as a majority of their membership non-professional and sub-professional men.

Professional engineers employed by the commonwealth in its public service agencies are excluded from membership as they have an organization that the Industrial Registrar found could more conveniently represent them.

In granting recognition to The Association of Professional Engineers, Australia, the Industrial Registrar overruled an objection of two single-industry organizations by saying, "It appears to me to be beyond doubt that in both organizations, professional engineers of the type represented by the applicant are in a minority and that they have no real opportunity of forcing the advancement, before the appropriate tribunals, of demands to which they consider they are entitled. Further, engineers employed by the local authorities, for whom other members of the objecting organizations work, are required to exercise supervision over such other members and the court has on several occassions held that this is a reason for allowing separate registration to an organization comprising persons exercising such authority."

MUCH OF RICHLAND'S WATER comes from wells surrounding the water-filled basin in the left center portion of the air photo of the city. Water from an irrigation canal artificially recharges this well field.

The Richland Story—Part II

Artificially Recharged Wells Provide City Water

L. L. Wise
Assistant Editor

ALTHOUGH MANY TOWNS and cities use wells as their source of water, probably no community is as wholly dependent on an artificially-recharged well supply as is Richland, Wash., the atomic city serving the Hanford plutonium works.

Perhaps an entirely different system would have resulted if, in 1943, the present 25,000 population could have been predicted. However, water demand has been met at all times by the development of the three well fields with 19.5-mgd. total capacity. Moreover, this supply is now adequate for anticipated future needs. How the town developed and grew was told in the first article of this series, ENR Sept. 8, p. 16.

Briefly, the water supply system includes the original Richland well-fields and the newer North Richland and Columbia River well fields. The first is located in the south central portion of Richland proper; the second just south of North Richland; and the third just north of Richland. The first two of these are recharged with Yakima River water from irrigation canals built years ago by the Richland Irrigation District. The Columbia River well field is supplied by pumping from that river.

The well supply at Richland is, in effect, a natural filter system and a natural storage system. The gravels serve the same function as filter sand would in a filter plant. According to figures maintained at Richland, the filter rate is 2.5 mg. per acre per day.

Although some reservoir storage is available, underground storage is employed in general. Capacity for the Richland well field has been computed as 25 mg. per foot of usable storage with 30 ft. available.

High per capita water use at Richland is primarily due to the hot, arid conditions in summertime. This results in heavy irrigation of lawns, etc., to provide a ground cover that keeps dust down and makes the town livable. Also, to combat the heat, all office and commercial buildings have water-type cooling systems.

In some of the original town area, a dual water system was installed, one for domestic, the other for irrigation water. Although such a development served well as an expedient, it is the desire of the Richland management to eliminate the dual system where possible because of the expense and the possibility of a cross-connection. The irrigation supply is chlorinated, but some threat of contamination still exists.

War-time system uses war-time pipe

The original water systems (installed during the war) employed combat-type steel pipe. To date this pipe has served well, but high maintenance is anticipated in the next few years.

The Richland well-field involves the use of a natural ground depression surrounded by eight wells, most of which are 60 to 70 ft. deep. Two wells located on a hillside overlooking the ravine are 100 and 170 ft. deep respectively. Each of the wells is equipped with a 1,000-gpm. pump, and the safe yield is estimated at 7 mgd.

This type of well-field system is feasible because most of the area is underlain by an alluvial clay at about 200-ft. depth. Water recharged in the well basins is retained on the clay formation, and does not percolate beyond recovery. The clay layer is tilted slightly toward the Columbia River, and some minor loss does occur.

The Richland well-field was originally drained once a week as a mosquito control measure. Recently this period has been increased but excellent control still exists.

This system was adequate as long as the population of Richland was 15,000. When the postwar expansion started, additional water supply was necessary.

Filter plant planned

At the outset of the postwar expansion, a firm of consulting engineers was retained to design a water filtration plant for Richland. This plant—to have a capacity of 36 mgd.—would have been supplied by Columbia River water.

According to the Richland management, engineering firms in the Northwest area capable of designing such a plant were advised that such a plant was under consideration. Several of these firms submitted proposals and the most favorable was selected. In fact, one news release stated that the designing firm "submitted the low fee for the design contract."

A 36-mgd. rapid-sand filter plant was accordingly designed and a construction contract awarded, but after initial work on this construction contract, operations were suspended. Then the Chicago firm of Alvord, Burdick & Howson was called in to review the water supply situation. Their recommendation was that the filter plant be abandoned and that additional well fields be substituted.

Reasons for suspension of construction work on the filter plant are not clear. In one official release it was stated that "test borings and exploration, which originally disclosed a satisfactory foundation condition, did not hold up as being true when the contractor started driving test piles." When this was discovered it was said to be too late in the season to allow time for redesigning of footings to compensate for unfavorable foundation conditions and still provide Richland with an adequate water supply during 1948.

There is some reason to believe that considerations other than that of foundations led to cancellation of the filter-plant project. A highly critical review report of the project by AEC's sanitary engineer, A. E. Gorman, called attention to several undesirable sanitary conditions. Among these were: A drainage ditch discharged into the Columbia River just above the proposed intake; a large sewer crossed this ditch, which, if it broke, could cause water contamination; the proposed filtered-water reservoir would have been built adjacent to and slightly below the level of an irrigation canal presenting another possibility of contamination; and plant design was unsatisfactory because raw water could enter the filtered supply (Hearing before the Joint Committee on Atomic Energy, Congress of the United States, Part 12, June 21, 1949, p. 529).

The report of the hearing also states: "For the design work on this water system, which was abandoned, and for the new sewage system, G. E. was paid $39,200 and Dewitt C. Griffin & Associates $193,700.

As an emergency measure—and one that could well serve on a permanent basis—two abandoned gravel pits were pressed into service as recharge basins for new well-fields. No work was required on the gravel pits proper except to smooth up the slopes, and supply a source of water.

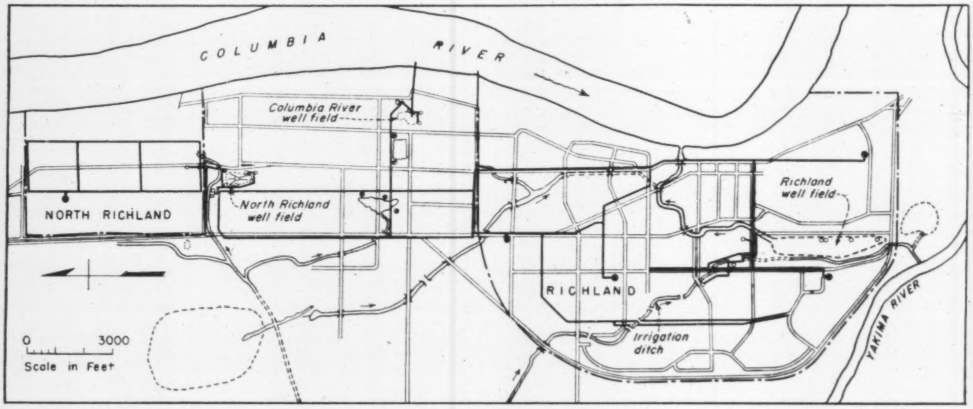
Only one of these, the North Richland well-field, was used during the 1948 water season. This field includes six wells that discharge into a common header. Although storage is available for 1 mg., for the most part the water goes directly into the system. Chlorination to a residual of 0.5 ppm. is provided in the common header. This compares with a residual of 0.25 ppm. at the Richland well field where storage—and thus better control of quality—is available.

The North Richland well-field originally had a capacity of some 10 mgd. As the 1948 season progressed, this capacity gradually decreased due to silting and algae growth. In effect, the recharge basin is a large filter. Gradually the pores of the filter became clogged—as any filter does—and no backwash was available for cleaning.

Fortunately, sufficient capacity was available, even after reducing rates, to supply the necessary water. At the end of the summer season, the well field was cleaned out by scraping off a surface layer with a bulldozer. The basin then had to be flooded for almost two weeks before the wells came up to rated capacity.

Incoming Yakima River water is now treated with copper sulphate, with

ONE WELL RECHARGE BASIN was formed by using this gravel pit site. Four of the six pump houses are visible.



THE RECHARGE BASINS serve both Richland and North Richland. Duplicate facilities are available to combat most emergencies.

the hope that algae growth will be inhibited sufficiently to assure continued operation. If this is not sufficient to reduce the clogging of the basin, some form of presedimentation may be adopted.

The third well-field uses a gravel pit just north of Richland proper. Columbia River water is drawn in through a 24-in. intake and pumped to the recharge pit. Slots in the intake are of such size that fish cannot enter the system. Pumping capacity of the intake system is 5,000 gpm. This well-field is serviced by three wells that pump either to a 2.2-mg. reservoir or directly into the system.

The existence of this Columbia River well-field explodes a myth about the Hanford Works proper. Some fishing interests claim that cooling water used in the plutonium-producing facilities of the Hanford Works are radioactive when discharged into the Columbia River. This, it was claimed, kills the fish in the river. However, the fact that water supply for the town of Richland is taken from the river below the point of discharge for the cooling water from the Hanford Works would seem to indicate that the authorities are satisfied that no radioactivity is present.

Another myth relative to the Hanford Works cooling water discharge is that the temperature of the river is raised so that large numbers of fish are killed. The Columbia River as it passes Hanford has an average flow of 115,000 cfs., and control at Grand Coulee Dam is such that minimum is 23,000 cfs. No data are available on the exact amount of cooling water required but the fifth semiannual report of the AEC says it would "equal the water consumption of a city of over a million inhabitants."

Now, if water consumption in this hypothetical city is 200 gal. per capita per day, the cooling water would have to be heated 75 deg. F. to increase the river temperature 1 deg. F. at low flow. It is hard to believe that this will kill many fish unless they all swim directly in front of the cooling water discharge before it has time to mix thoroughly with the river water—not a likely situation.

Richland is owned by the federal government and operated under contract by the General Electric Co., Earl L. Richmond is Richland community manager for G.E. J. M. Heffner is in charge of the public works division and H. N. Petty operates the water system.

Cities Hiring Experience Managers

An increasing number of newly-hired city managers are taking over their jobs with a background of experience in public administration, the International City Managers' Association reports.

Statistics show that of the 241 city managers appointed in 1948, 188—or 78 percent—had previous public-administration experience. Nearly one-third of those hired had previously been city managers of other cities. The 77 cities that made city-manager appointments for the first time last year appointed 30 men with previous manager experience, 37 men from other city posts, five from private industry, and two from state engineering departments. Backgrounds of three are unknown.

Cities are going further afield for their managers, the statistics revealed. More than one-half of the total managers appointed last year were nonresidents at the time of appointment. Of this group, 51 were city managers moving to larger cities.

At the end of 1948, 856 cities and counties were operating under the council-manager plan of government. Thirty-four other jurisdictions had adopted the plan at year's end, but it was not to become effective until 1949 or 1950. At least 20 other cities have adopted council-manager government this year. Latest large city to approve the plan was Des Moines.

Council-manager government is most popular in cities of from 5,000 to 10,000 population the survey revealed with 177 cities in this group with managers. Percentage-wise however, the larger cities with populations from 50,000 to 100,000 ranked first with 32 per cent—34 of 106 cities—with managers. Twenty-two of the 92 cities over 100,000 are council-manager cities.

Maine leads all other states in the number of local jurisdictions with managers with 97. Michigan was runner-up with 73, Texas had 70, California—62, and Florida and Virginia—53.

Record Blasts Move Mountains As TVA Quarries Rock for Dams

George K. Leonard
Project Manager, Upper Holston Projects
Tennessee Valley Authority

THE LARGEST construction blast ever recorded—using 1,363,000 pounds of explosives—was fired last spring by the Tennessee Valley Authority. It was the sixth large coyote tunnel quarry blast TVA has set in two years. The six have totalled nearly 2,000 tons of explosive and have produced over 5¼ million cu. yd. of broken stone for construction of Watauga and South Holston dams in northern Tennessee.

Both of these TVA dams have rolled earth cores supported on either side by massive quarry-run rockfills.

Rock in both quarries was ideal for tunnel blasting. At Watauga it was a medium-to coarse-grained, light gray quartzite; at South Holston it was a fine-grained, gray sandstone, interbedded with shale. At both sites the bedding was thin to medium-thick and broken by cross-jointing into pieces, which when disturbed by blasting were generally handled by a 3-cu. yd. shovel dipper. Fragmentation was excellent and required little secondary blasting.

Previously, well drills have been used by TVA on all large quarry operations. Most have been in limestone or massive dolomite or graywacke. There the 20 to 30 ft. burden peeled off the quarry face has produced rock suitable for crushers or quarry-run fills. At Watauga Dam the well-drill method was started, but it was soon abandoned because of the hardness (7 on Moh's scale) and abrasiveness of the rock. Metallurgists were unable to recommend an alloy steel or a method of dressing and tempering that would hold the edge or gage on the bits.

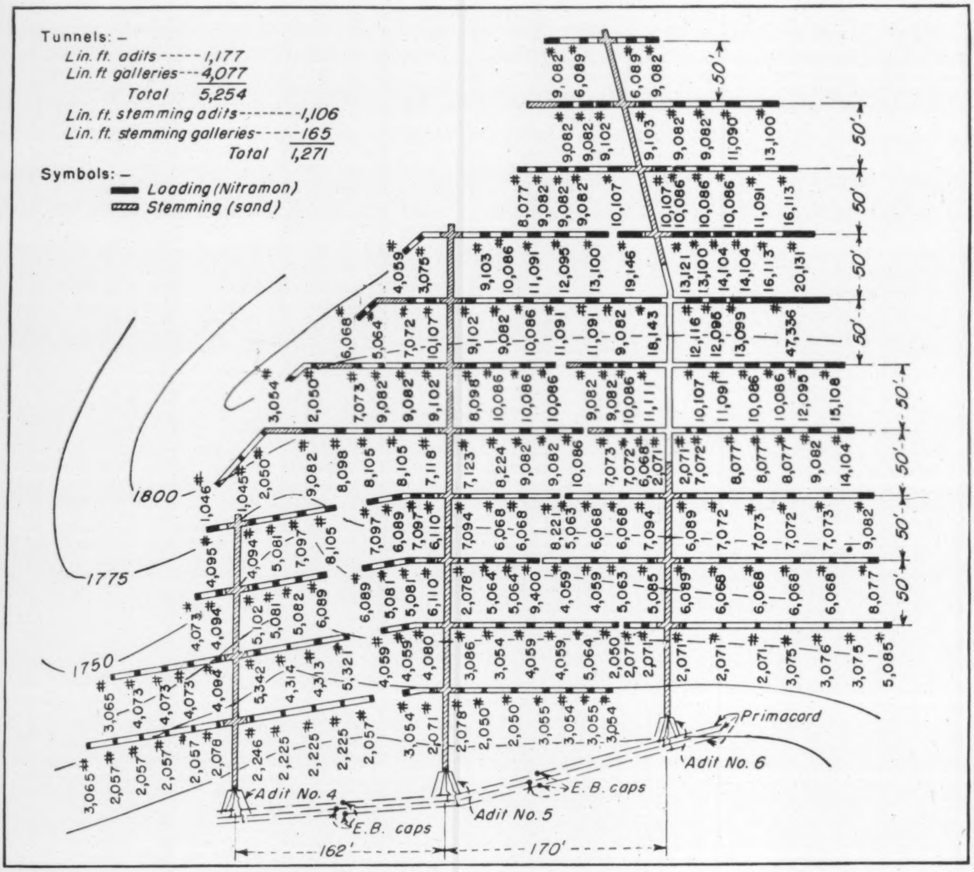
The tunnel method

A network of small tunnels was driven into the mountain on one or more levels and the explosive charges used were then distributed throughout. Where more than one level was required, they were spaced about 100 ft. apart. Since adits were used only for access, their footage was kept as low as possible, and explosives were put in the cross-cuts which branch off from the adits at about right angles.

Length of adits depended upon the slope of the mountain. As a general rule, the inside end of each adit has not much more than a 100-ft. cover. Adits were spaced up to 200 ft. apart along the face of the mountain; cross-cuts were spaced along the adits at 50-ft. intervals, the outside one being 50 ft. from the portal.

It was found to be economical to make cross-cuts no more than 100 ft. long since mucking is a time consuming operation. With adits 200 ft. apart and cross-cuts 80 ft. long, a 40-ft. space remained between ends of adjacent cross-cuts. All tunnels were driven to provide drainage toward the portals.

Tunnels were 4 ft. wide and 6 ft.



LOADING PLAN for largest tunnel blast ever made. All tunnels are on one level. This load of explosives—1,363,000 lb.—was fired at South Holston Dam.

high—about the smallest possible for convenient driving. Drilling at each heading was done with drifters mounted on columns using 7-ft. steel. Starting with one heading in the adit, additional headings to the left and right were started as the cross-cut locations were reached.

At the driving peak there were often 12 to 15 headings going at one time. After a round was drilled out and loaded, the miners rotated to another heading where mucking had been completed. As many as twenty 5-ft. rounds were fired per day. The drilling and firing pattern for the headings was the so-called "hammer cut."

Standard steel bits were used for the first blast, but due to excessive abrasiveness of the quartzite they required frequent dressing and were abandoned in favor of the recently developed carbide insert bits. These bits did excellent service, and although the bit is high priced as compared to the standard bits, it was found that in hard rock a considerable saving could be made by their use.

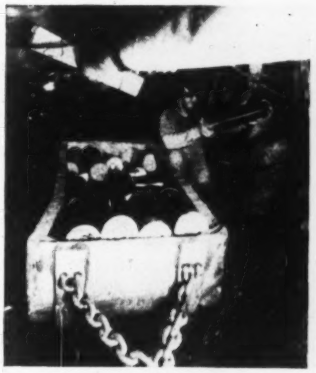
Muck in the cross-cuts was hauled in wheelbarrows to the adit. There it was pulled to the portal with drag scrapers hooked together in tandem and handled by a two-drum electric hoist outside the portal. Tunnels were not mucked clean; only enough was removed to permit a rather difficult passage for the workmen.

Determining loadings

As a basis for determining the amount of explosive to be used, the volume of rock to be moved from above each cross-cut was carefully determined. Actual amount of explosive per cubic yard of solid rock varied from about 1 to 2 pounds, outside tunnels being loaded the lightest. Computation of charges was directed by the powder company's technicians who were present at all times during the loading to help check the installation and render technical assistance.

No fixed rules were used in distributing the charges of explosive along the tunnel. Placing depended upon many variables and to a great extent on the experience and judgment of the quarry superintendent and his staff.

Among the variable factors which were considered in planning the large blasts were the following: all geological characteristics including tightness and thickness of bedding, jointing, direction of dip, hardness and extent of weathering; depth of cover; spacing of tunnels, and condition of rock at



SLED-DRAWN along the adits, the cans of explosive were placed while drilling and blasting went on within 50 ft.

STACKED AT INTERVALS along the cross-cuts, piles of explosive containes two primers connected to fuse lines.

COYOTE TUNNEL BLAST DATA

		WATAUGA DAM			SOUTH HOLSTON DAM		
		Blast No. 1	Blast No. 2	Blast No. 3	Blast No. 1	Blast No. 2	Blast No. 3
Adits Driven	No.	3	8	5	5	3	2
Total Length Adits	l.f.	465	1,025	653	1,109	1,177	720
Total Length Galleries	l.f.	1,093	1,610	1,379	2,974	4,077	1,306
Total Length Tunnel	l.f.	1,558	2,635	2,032	3,993	5,254	2,026
Working Time to Drive	Days	40	51	67	54	106	34
Average Advance per Day	l.f.	39	52	30	74	50	60
Quarry Volume Over Tunnels	c.y.	271,500	355,700	242,800	512,758	931,935	269,100
Estimated Quarry Yield	c.y.	600,000	800,000	600,000	925,000	1,800,000	560,000
Solid Rock per Ft of Gallery	c.y.	248.4	208.5	176.1	172.4	228.6	206
Total Explosive	lbs.	316,486	526,925	422,563	844,503	1,362,095	501,102
Primers Used	No.	131	199	173	378	436	164
Explosive per Ft of Gallery	lbs.	289.6	327.3	306.4	283.8	334.3	384
Explosive per Cu Yd Solid Rock	lbs.	1.17	1.57	1.74	1.64	1.45	1.86
Explosive per Cu Yd Loose Rock	lbs.	0.53	0.66	0.70	0.91	0.70	0.90
Blasting Date		9–11–47	11–8–47	3–11–48	7–14–48	2–6–49	4–16–46

the end of the tunnels. In general, the direction of movement of the entire block of rock was also predetermined and planned.

Cross-cuts were loaded with Nitramon, in stacks (of cans varying from 24.5 to 33 lb. each) placed at intervals according to the loading plan. Two special 20.6-lb. primers, required by the explosive, were placed with each stack. Cans of explosive were pulled on a sled along the adit and carried by hand into the cross-cuts. Time required to load each of the large systems of tunnels was several weeks. Using Nitramon, it was considered safe to load a completed tunnel while drilling and blasting were going on in an adjoining tunnel only 50 ft. away.

Primacord was used as the detonating fuse. This fuse consists of an explosive core contained within a waterproofed textile covering. It is relatively insensitive and practically instantaneous, shooting at a velocity of 20,350 ft. per second. Extensively used in well drill and tunnel blasting because it is light and strong, it is comparatively safe, and though quite insensitive, it is sufficiently powerful to be a very effective detonator.

Charges carefully connected

With charges in place in the cross-cut, a line of cans was laid on the tunnel floors so that all stacks in each cross-cut were connected. Then the two primers in each stack were connected to two lines of Primacord leading to the two main firing lines in the adit, which in turn led to the portal. All fuse lines were laid on bags of sand along the floor and were then covered by additional sand bags. At no point was the fuse allowed to rest on rock. The double fuse lines along all tunnels were connected together at frequent intervals so that a break or misfire in any line had no chance to isolate any part of the charge.

After fuse lines had been carried to the portals, adits were stemmed with sand in such a way as to get the full effect of the explosive where it was wanted. No stemming was done in the cross-cuts except in special cases where they ended close to the face with small burden.

For the first blast the sand was stacked in the adits in bags which were pulled into the tunnel on a sled and placed by hand. This method was slow and costly, and after a few experiments it was found that the stemming could be blown into place in the tunnel through a 6-in. pipe with a 1 cu. yd. concrete gun.

After stemming was completed, the Primacord leads from the adits were connected to a double Primacord bus circuit. Near each adit portal, and at other strategic points, two No. 6 electric blasting caps were taped to the bus circuit, the wire leads from the caps being connected in series to a No. 6 insulated wire firing circuit. No delay devices were used; the entire shot was fired simultaneously with 220 volts from a point 2,000 to 4,000 ft. away. There was, however, a slight delay due to the time interval in detonation of the Primacord. This could be predetermined by the position of the caps on the bus.

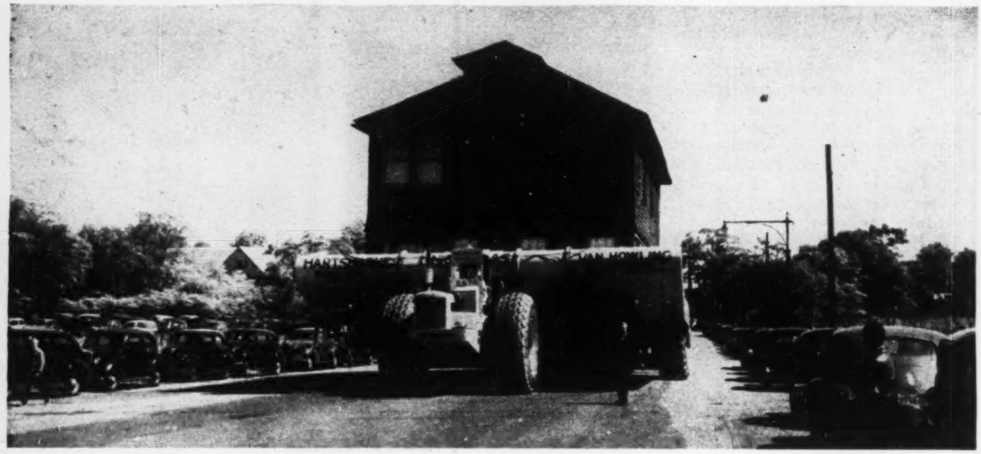
High yield of stone

Tunnel shots made in the face of a steeply sloping mountain produce an exceptionally high yield of broken stone as overbreak extends a great distance up the face. Estimating the natural swell in the blasted rock at 50 percent, and assuming a conservative overbreak, it is estimated the yield in broken stone under ideal geologic conditions is twice the volume of solid rock over the tunnel system.

Actual statistics gathered from the results of the six tunnel blasts made at the two dam sites appear in the accompanying table of blast data.

The magnitude of the blasts offered unprecedented opportunity for scientists from the U. S. Coast and Geodetic Survey, Naval Research Bureau, War Department, Massachusetts Institute of Technology, and the Carnegie Institution of Washington to measure the distance and rate of travel of the tremor through the earth's crust. Effects of the larger blasts were recorded on seismographs as far distant as St. Louis, Mo., and Ottawa, Can.

The Upper Holston projects were designed and are being constructed by the Tennessee Valley Authority under the general supervision of C. E. Blee, chief engineer. E. C. McClenagan is construction superintendent for both dams with Robert F. Taylor and Paul H. Jones, assistant construction superintendents, directing work at South Holston and Watauga Dams, respectively. Oren Reed is construction engineer. W. D. Simpson, tunnel and quarry superintendent, was in direct charge of tunnel driving, loading, and firing all the blasts. F. D. Bickel and R. C. Brown of the DuPont Company were the technical advisers.



CRADLED on a three-point suspension system, houses weighing up to 150 tons were "driven" from the Van Wyck Expressway right-of-way to new locations a mile away.

Moving a House a Day

UPROOTING AND REPLANTING of 58 houses—at a rate of better than one a day—characterized a recent New York City project to clear the northern end of the Van Wyck Expressway. The Expressway is being built to speed traffic between the LaGuardia and International Airports. The houses were purchased by the City of New York and will be offered for sale in their new locations.

The rapid movement of houses was made possible by a diesel-powered, U-shaped, four pneumatic-tired machine that picked up houses and put them down about a mile away on a new site. With a 150-ton capacity, the machine carried structures as large as 36x60 ft. at speeds varying from 2 to 25 mph. depending on the terrain.

Buildings that could not be accommodated by this machine were moved by the conventional system of pneumatic-tired dollies pulled by trucks.

Houses to be transplanted by the "house-mover" were trussed up under first-floor joists with transverse beams above longitudinal girders. The girders were strategically placed to transfer the load to the three-point suspension system of the moving machine. Three-point suspension minimizes structural warping during movement.

The suspension system consists of an I-beam front support just behind the power unit and a double I-beam carrier spanning the open end or rear of the U-shaped moving machine. The carrier is located under the arms and in front of the rear wheels.

Each end of the double I-beam as well as the front support is suspended by a cable, running through four pulleys to an individual electric-powered hoist. Cables from the supports also extend through the hoists to a single winch by which the entire building is lifted uniformly. Individual hoists permit the building to be leveled up regardless of the position of the machine.

After a building is temporarily trussed up, the moving machine is backed into carrying position so that the U-frame surrounds three sides of the structure. The front support is then connected to one end of the longitudinal girders by U-bolt seats and the double I-beam is inserted under the other ends of the girders. Each end of the double I-beam is connected by a cable, four-pulley suspension system to the individual hoists on the machine frame.

When the suspension systems are completely assembled and tested, power is applied to the separate hoists until the three supports are level. Then the building is lifted off its foundation by the single winch, and hauled across fields and along police-patrolled highways to its new location.

Straddling the new foundation, the moving machine is backed into position until the house is directly above the new walls. The house is then lowered onto temporary cribbing set up between the walls.

New concrete foundations, including utilities spotted to facilitate connection to house plumbing, were built before the houses were moved. Side walls were poured to ground level, while only two or three feet of front and rear walls were placed to prevent interference with house positioning. Foundations were completed using concrete block.

Houses were not occupied during movement. Re-occupancy was permitted only after utilities had been connected and foundations closed in. This work was usually completed in 5 to 7 days.

The contract for moving the houses, which also includes grading, construction of sidewalks, curbs and pavement, and connection of utilities is held by Associated Building Movers Inc., Yonkers, N. Y. Total contract price is about $500,000 of which $210,000 is for house moving.

The work is being done for the Board of Estimate under the Bureau of Real Estate. Oscar Frisch is resident engineer for the Bureau and H. A. Strecker, New York City, is consulting engineer.

The house-moving machine was manufactured by R. G. LeTourneau Inc., Peoria, Ill.

The "GREAT GILDERSLEEVE"*

[illegible]

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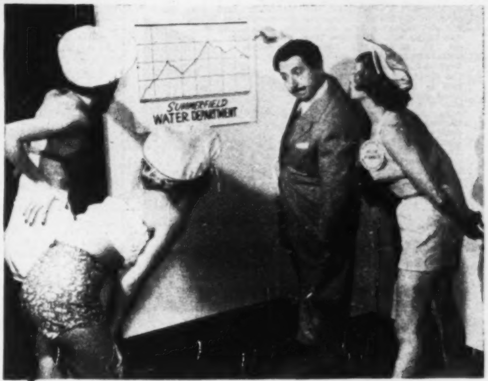
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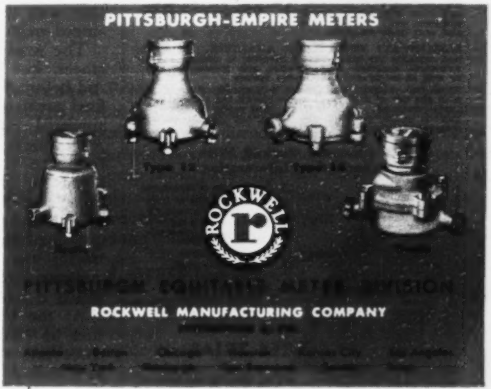

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Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phrases of Construction Contracts (McGraw-Hill)

Arbitrating Disputes

Where a construction contract provided that no additional compensation would be paid to contractor for delays in the work or for payment of higher wages than those specified in the contract, no right to recover for such items exists and no arbitration can be had on claims based thereon.

A contract provision that claims for extra work should be filed in five days does not constitute a statute of limitations, and arbitration of a claim for extra work should be allowed where the demand to arbitrate was made within a reasonable time.[1]

For other cases on arbitrating disputes see ENR, Sept. 16, 1948, p.103.

(1) A. B. Barr & Co. v. Municipal Housing Authority for City of Yonkers, 86 N.Y.S. 2d 765 (Supreme Court of N. Y., Feb. 1, 1949).

Engineer's Capricious Act Not Binding on Owner

A paving contract provided that the work was to be done under the supervision of a designated engineer who was given "full and absolute authority to accept the completed improvements as such for the property owner and to release * * * the contractor from further obligation after such acceptance with the exception of the guaranteed maintenance".[1]

The work was accepted by the engineer, but shortly after acceptance, and before the contractor received the final payment, large cracks and fissures appeared throughout the pavement. An inspection of the work disclosed that the contracting company had failed to provide expansion joints called for by the specifications and that the pavement was not of the required minimum thickness. The contractor was notified of these defects and requested to remedy the same, which it refused to do.

At the trial the engineer testified that he "went over the job two or three days a week for an hour or two and looked it over generally. That had he known no expansion joints were installed, he would not have accepted the work as completed ***"

The contractor was denied a recovery. The court indicated that while the acceptance of the work by the supervising engineer established a prima-facie case on behalf of the contractor, the testimony of the engineer indicated that in accepting the work, he "was not acting on his own knowledge and judgment and so was acting arbitrarily and capriciously." The acceptance of the work by the engineer under those circumstances was not binding on the party for whom the work was being done.

The court in its opinion stated: "It is well settled, however, that if such acceptances were rendered fraudulently,[2] or if there was such substantial departure from the specifications in the accepted work as to create an inference of fraud,[3] or if the acceptance were beyond the authority conferred on the supervising engineer,[4] then said acceptances are not binding."

(1) Uvalde Rock Asphalt Co. v. Fantham, 210 S.W. 2d. 646, Court of Civil Appeals of Texas, Galveston, April 15, 1948.

(2) Herring v. City of Mexia, Tex. Civ. App., 290 S.W. 792; Uvalde Rock Asphalt Co. v. Langham, Texas Civ. App., 68 S.W. 2d. 646; and Fisher v. L. E. Whitham & Co., 120 Tex. 516, 39 S.W. 2d. 869, 79 A.L.R. 1095.

(3) Randolph S. Blome Co. v. Herd, Tex. Civ. App. 185 S.W. 53, writ refused; and see Fisher v. Whitham, supra.

(4) Harrell v. City of Lufkin, Tex. Com. App., 280 S.W. 174.

Implied Contracts

"A true implied contract, or contract implied in fact, is an agreement which depends for its existence on some act or conduct of the party sought to be charged, and arises by inference or implication from circumstances which, according to the ordinary course of dealing and a common understanding of men, show a mutual intention on the part of the parties to contract with each other."[1]

"'To recover for work and labor on the theory of an implied contract it is ordinarily deemed essential to show that the services were rendered under the reasonable expectation that they would be paid for, by the person sought to be charged, and that the person sought to be charged knew that the services were being performed with the expectation that he would pay for the same, and the law will not imply a promise to pay for services contrary to the intention of the parties, as where it is obvious that there was no intent on the part of either party that payment should be made, although if the recipient of services should, as a reasonable man, have understood that the performer expected compensation, the actual belief of the recipient as to such matter is immaterial.'"[2]

(1) Ross v. Raymer, 201 P. 2d 129, Supreme Court of Washington, Dec. 17, 1948.

(2) Ross v. Raymer, 201 P. 2d 129, quoting from 71 C.J. 41, Sect. 6.

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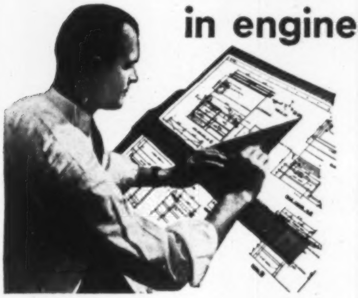

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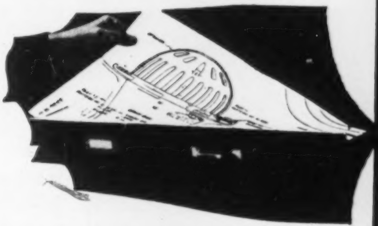

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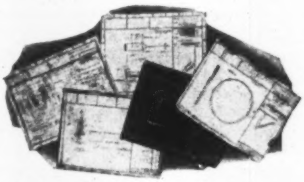

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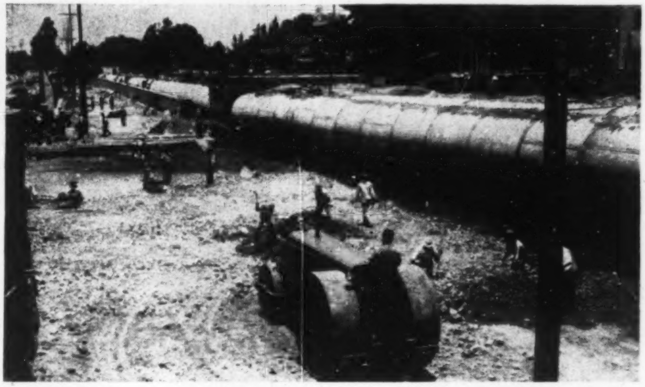

ROADWAY IN A RIVER BED—A new east-west expressway soon to be completed in Mexico City will run in the bed of an existing river under two existing north-south boulevards, one of which is the heavily traveled 10-mile long Avenue Insurgentes. The stream, the Rio de la Piedad, virtually an open sewer, is being confined in three 10 ft. dia. concrete pipelines. Roadways of the new expressway, confined between retaining walls, parallel this construction on either side. They will pass under three concrete bridges that will carry the existing boulevards and then rise to the surface to run on top of the pipelines. The underpasses are to be brilliantly lighted to reduce any abrupt transition from or into bright sunlight. The depressed part of this new expressway will cost about $350,000. The work is being done by the department of public works of the Federal District, which comprises the Mexican capital.

Cement Industry

Belgium—Financing of a project for the modernization of the facilities of Cimenteries et Briqueteries Reunies at Lixhe near Vise, has been approved by the Economic Cooperation Administration. A new plant will be built to replace five obsolete ones and it is expected to produce about one-tenth of Belgium's cement output. Two furnaces, 475 ft. long by 11½ ft. in dia., and needed auxiliary machinery will be bought in the United States. Total cost of the plant will be about $11,000,000, involving $1,535,000 in ECA assistance funds.

Colombia—The new Portland cement plant at Barronquilla is reported to be producing a quality product at the rate of 300 tons per day. If this continues, imports of ordinary cement into that coastal area of Colombia will become unnecessary. All equipment of this plant was purchased from a United States firm for about $650,000.

Canada – Cement production in Canada in 1948 exceeded all previous records both in quality and total value, the sales totaling 14,127,123 bl. at $28,264,987. Shipments in 1948 by provinces was (in bbl.) Quebec, 6,517,031; Ontario, 3,660,756; Manitoba, 1,697,042; Alberta, 1,224,313; and British Columbia, 1,027,981.

French Indochina—According to the Department of Commerce, production of cement in French Indochina rose to 97,259 metric tons in 1948 from the 39,900 tons produced in 1947.

Power

New Zealand – John L. Savage, widely known American authority on dam construction, has accepted an invitation by the New Zealand government to inspect the site of the projected Clutha River Dam and to advise on its construction. This was announced from Wellington by Radio New Zealand.

Foundation work for the dam is already in progress and 120,000 cu. yd. of material have been excavated as the first step in building the diversion channel. The dam, which will be the biggest in the South Island chain of hydroelectric stations, is going up on the Clutha River above Roxburgh, in Otago Province.

India—Westinghouse Electric and Manufacturing Co. has made an agreement with the government of Madras Province for the supply of $1,600,000 worth of generating equipment for a 60,000 kva. hydro-electric station on the Machkund River about 100 miles northwest of the port of Vizagapatam on the Gulf of Bengal. An order for a duplicate station on the other side of the river is expected to be placed in 1951.

The nature of the river makes an extensive dam unnecessary. Instead there will be a small diversion weir several miles above the falls and gorge below which the station will be built. All civil engineering works are to be handled by the Madras provincial public works department which has had considerable experience on similar projects.

Pakistan—The importance of forests and plants in controlling water and floods was the theme of a recent meeting of the water section of the United Nations Scientific Conference on the Conservation and Utilization of Resources at which Khan Bahadur Hameed of the West Punjab Government of Pakistan gave an abstract of a paper prepared by R. M. Gorrie, Conservator of Forests of West Punjab, which described the watershed (water basin) management work done in the West Punjab area. According to the author, the main aim was to preserve the plant cover in a reasonable condition. If this was inefficient or insufficient, engineering devices—such as contouring, building of check dams or terracing of the plowlands—was needed.

Highway Congress

Peru—The Fifth Pan American Highway Congress will be held in Lima next year. Although the congress is scheduled to convene every year, no meetings have been held since the one in Mexico City in 1941. Tentative date for the 5th congress has been set for October, 1950, by the Peruvian Minister of Public Works, Jose del C. Cabrejos.

The decision to hold the Congress in Lima became known when the minister invited the Asociacion Peruana de Caminos (the Peruvian Good Roads Association in Lima) to join the organizing committee for the 5th meeting. The association is an affiliate of the International Road Federation in Washington, D. C.

The Pan American Highway Congress—in whose activities the U. S. Bureau of Public Roads has always played an important role—is composed of official delegates of all American republics. It serves as a medium for the exchange of technical and economic data on highways and highway transportation.

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AMERICA'S STANDARD FOR OVER 25 YEARS

SUBURBAN PLANNERS are getting a chance to get everything ready in advance in Stevenage, London's "No. 1 satellite town." Here, one of the planners compares a relief map of the tract with a draft of the Master Plan. Elsewhere in planning headquarters, housing and landscaping are being planned and a soil laboratory is testing the tract. (Combine Photo)

India—To save the country's agriculture from having to gamble on the monsoon, the India government's meteorological department will attempt to produce artificial rainfall—by spraying pellets of solid carbon dioxide into clouds above the freezing level.

About 100 lb. of carbon dioxide is considered sufficient to keep the crops from withering in an area of 10 square miles. The cost of 100 lb. of carbon dioxide is nearly $36, but the experiments will cost more if civil aircraft are to be maintained and operated only for this purpose.

A party of Indian scientists was scheduled to leave the middle of May to survey the Himalayas' Sikkim region—to the east of Nepal—in search of a suitable site for a high altitude research station.

The Indian meteorological department in 1947 originally proposed establishing a multi-purpose research laboratory in the central Himalayas in 1947 for the study of snow and glaciers, cosmic rays, astronomy, physics, meteorology, high level observations and the Himalayan flora and fauna. In June 1948, a preliminary survey party of six scientists went into the Badrinath and Kauri areas.

Puerto Rico—The Puerto Rico Planning Board approved public improvement projects totalling $31,367,749 during the fiscal year 1948-49, according to an official report.

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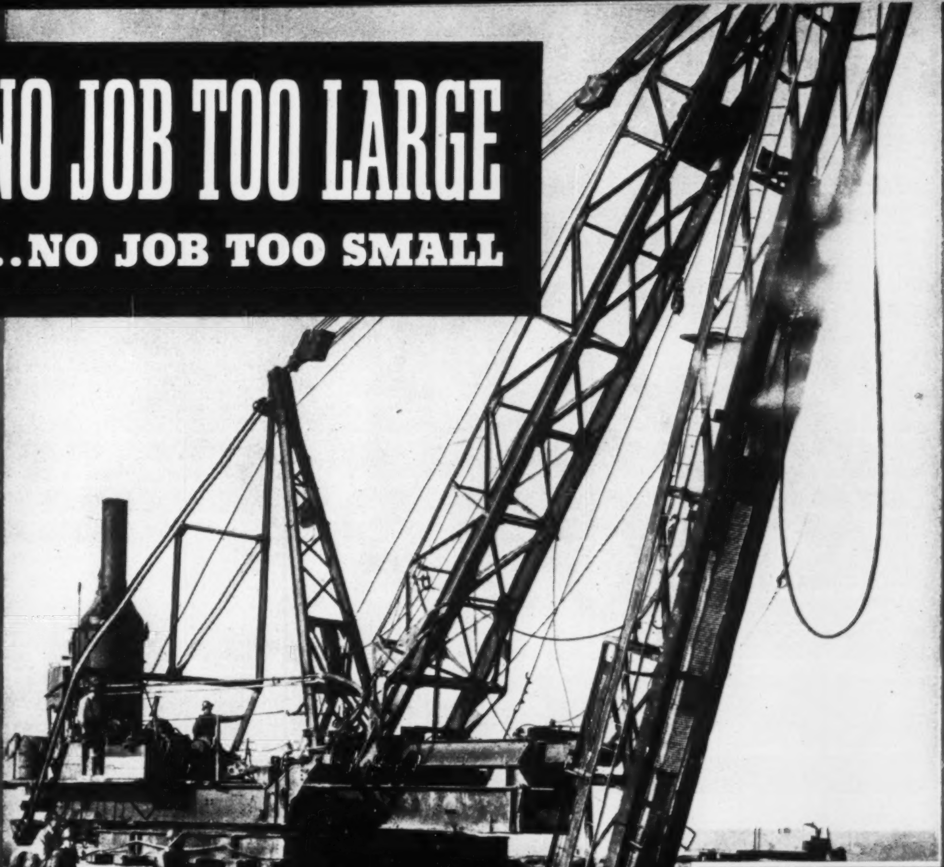
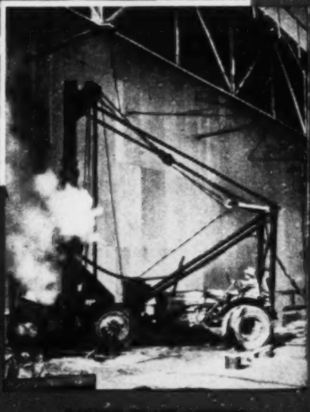
...NO JOB TOO SMALL





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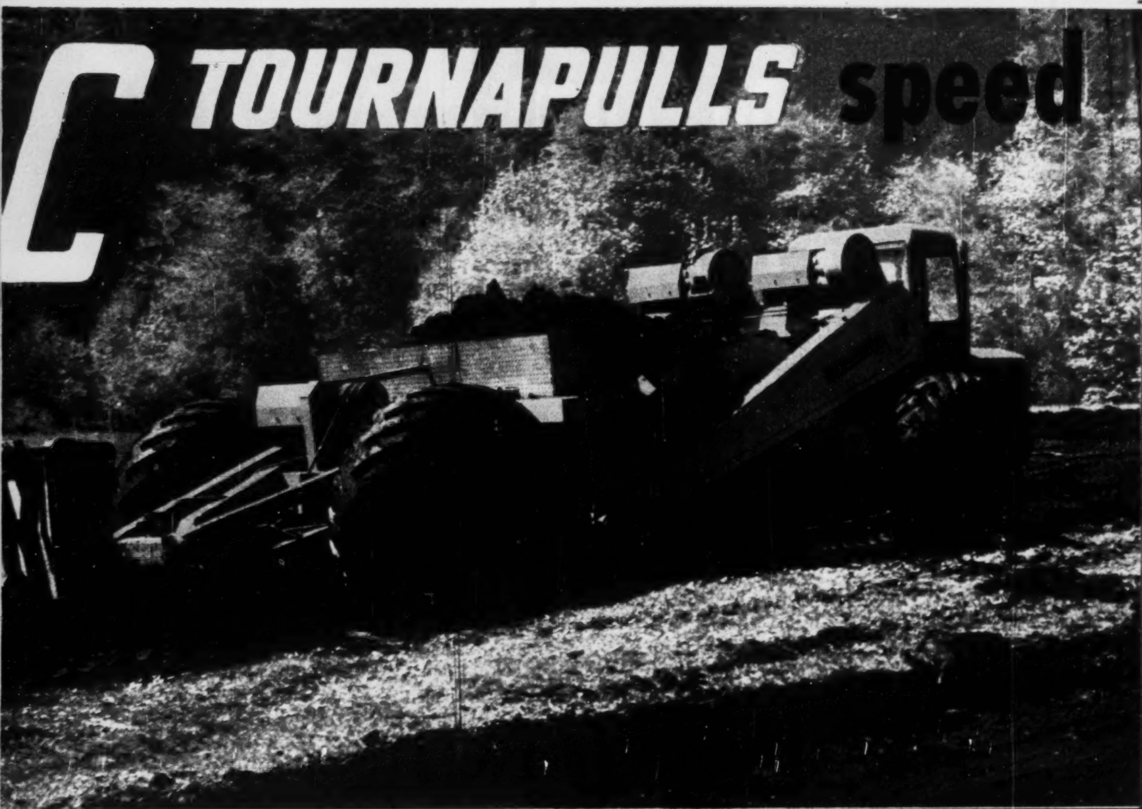
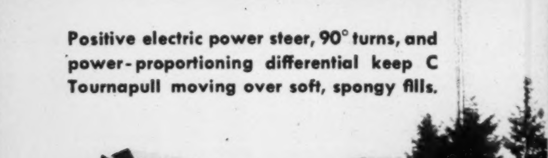
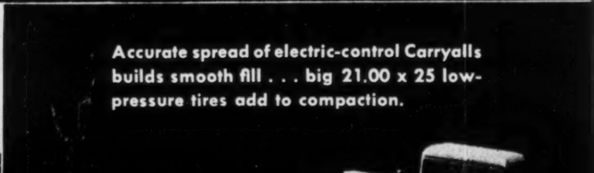




Positive electric power steer, 90° turns, and power-proportioning differential keep C Tournapull moving over soft, spongy fills.



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ON 5¾ miles of new roadbed for U.S. 101, near Tillamook, Oregon, Contractor Vernie Jarl of Gresham tackled approximately ½ million yards of sand, gravel, hardpan, clay, and loamy topsoil that turns to muck when it rains. Material is never dry because the Tillamook area has heaviest annual rainfall in the country. Yet, Jarl is keeping production on schedule with 3 high-speed C Tournapulls, which are handling 65% of total yardage. Here's a typical performance report:

Make 1100′ cycles in 3.2 min.

On short, 550′ one-way haul, each hustling "C" delivers a load every 3.2 min. . . . makes 16 trips an hour. Loads average 11 pay yards in clay and loam. That's 176 pay yards an hour for each "C" . . . and 528 yards hourly for the fleet of 3 electric-control Tournapulls.

"These machines move dirt cheaper than my tractor scrapers on hauls of about any length," reports Jarl . . . "and they're a great improvement over previous Tournapulls in dirtmoving ability and ease of operation."

Adds two more electric rigs

Jarl, a LeTourneau equipment user for over 10 years, bought his first electric-control Tournapull in August, 1948 . . . added 2 new "C's" to his fleet last April, when he started the tough Tillamook contract. His mobile, rubber-tired Tournapulls drove to the job from Portland over main highways . . . and made the 77-mile trip through traffic in just 5½ hours road time!

Ability to deliver more yards per hour . . . handle more jobs per year . . . earn more profit per job is the reason why successful dirtmovers everywhere are turning to high-speed, rubber-tired Tournapulls. Ask your nearest LeTourneau Distributor to show you what these new electric-control "C's" can do for *you*. Call him TODAY.

While loads average 11 pay yards, Contractor Jarl estimates that his new C Tournapulls often pack in 12 pay yards of loam.

Tournapull, Carryall-Trademark Reg. U. S. Pat. Off. R159

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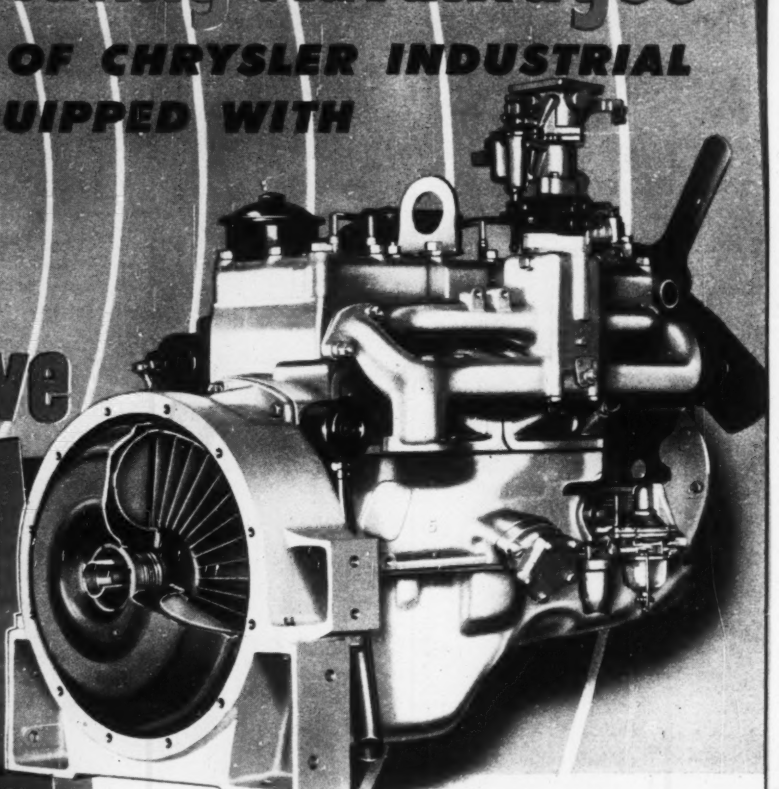

ABSORBS SHOCK OVERLOADS in a safety cushion of oil!

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ELIMINATES JOLTS, AND GEAR RATTLE!

PERMITS ENGINE TO BE SPEEDED UP TO TORQUE PEAK with output shaft turning at lower speed!

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PROVIDES GREATER EASE OF HANDLING when jockeying into position!

COSTS ONLY A FEW DOLLARS MORE THAN THE CONVENTIONAL FLYWHEEL WHICH IT REPLACES

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MEN AND JOBS

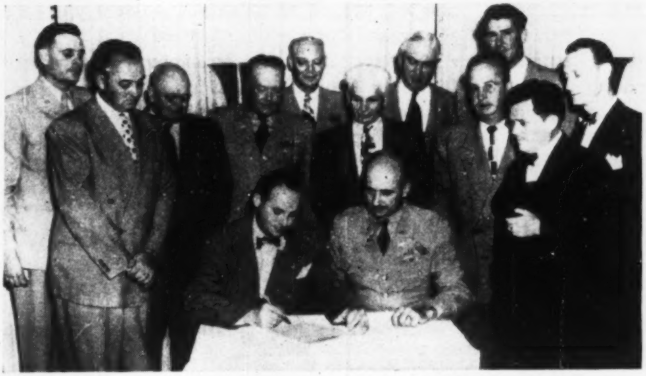
Charles H. Sells, former superintendent of public works for New York State, has been appointed first engineer of the temporary 21-man Niagara Frontier Water Commission, created at the last session of the state legislature. He will be assisted by five associate engineers, three of whom have been named—Leon H. Wendel, of Lockport; Russell Suter, of Albany; and Harold S. Thomas of Rochester. Associate engineers later will be named to represent Erie and Wayne counties.

Col. Emerson C. Itschner has become district engineer at Seattle, Wash., for the Corps of Engineers, after having served since 1946 as chief of the construction operations division of military construction in the office of the Chief of Engineers at Washington, D. C.

Kenneth W. Langford of Toronto, has been appointed town engineer of Brampton, Ont. A graduate of the University of Toronto, 1930, he served with the Royal Canadian Engineers during the war in charge of work projects in Canada and Newfoundland. He succeeds **Donald T. Black,** town engineer for the last 19 years, who has been appointed building inspector of Brampton.

C. Victor Weir of Calgary, has been appointed chief of the engineering and construction division of the federal Department of Mines and Resources, in its Lands and Development Service Branch, at Ottawa. He succeeds **T. S. Mills,** retired. A graduate of the universities of Alberta and Toronto, Mr. Weir has been superintendent of the Calgary transit system since 1946. He served overseas, latterly as deputy assistant director of mechanical engineering at Canadian Military Headquarters in London.

Wean Engineering Co., Inc., Warren, Ohio, has named **M. D. Baughman, jr.,** assistant chief engineer; **A. S. Schmidt,** supervisor of construction and design engineering; **W. O. Jones,** chief design engineer, and **W. P. Tolbert,** chief draftsman for construction.



A fourth Affiliated Engineer Reserve Unit was sponsored recently by the Los Angeles, Calif., chapter of the Associated General Contractors. It is to be an aviation engineer battalion, made up of men who live in Santa Barbara. The purpose of these units is to provide promptly a highly skilled group of technical experts in case of a war emergency. In the picture are, seated left to right, W. D. Shaw, Col. W. D. Luplow, district engineer, Corps of Engineers; standing front row, left to right, Col. Frank McNamara, C.O. of 916th Engineer—Aviation Group; Robert C. Westwick, Col. Daniel E. Squier, C. Dick Craig, Ralph Range, and Col. M. C. Pellish. Standing, back row, left to right, Lt. Col. E. C. Paules, Norris Montgomery, Edward Haskill, L. E. Neal and I. E. Brown.

John W. Gittins of Kingston, formerly assistant district engineer in the Wilkes-Barre office of the bureau of engineering, Pennsylvania State Department of Health, has been named acting secretary to the Sanitary Water Board. He succeeds **William A. Gorman,** Harrisburg, secretary, who has become public health engineer with the U. S. Public Health Service, New York office. He had been with the bureau of engineering 12 years and served three years as captain in the sanitary engineering corps at Ft. Knox during the war.

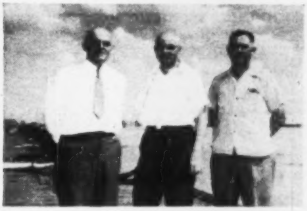
Brig. Gen. Don G. Shingler has been appointed division engineer of the Upper Mississippi Valley division, Corps of Engineers with headquarters at St. Louis. He has been chief of the engineer division, European command headquarters in Germany since 1946, succeeding Col. Clark Kittrell.

Ford Kurtz, since 1940 engineering manager and chief hydraulic engineer of the J. G. White Engineering Corp., has been elected vice-president in charge of engineering.

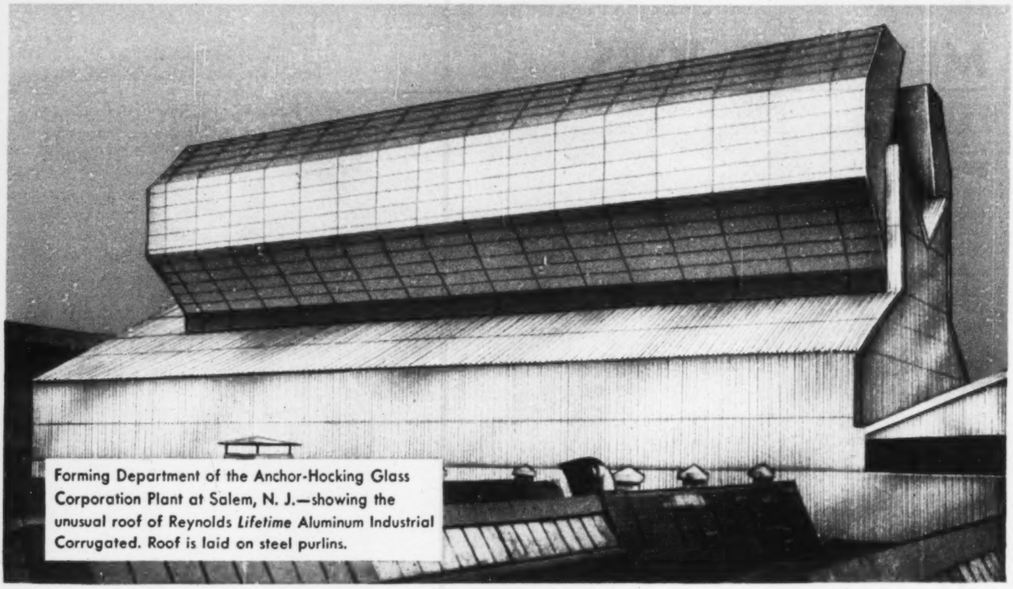
John Hayes, Pasadena, Calif., formerly with the Pasadena water department has been appointed water engineer of Arcadia, Calif.

The appointment of **Senior Sanitary Engineer Sylvan C. Martin** to head the Great Lakes Drainage Basin Office of the Division of Water Pollution Control at Chicago has been announced by Assistant Surgeon General Mark Hollis, Chief of Engineering Activities of the Public Health Serv-

(*Continued on page 61*)



Working on the Delaware Memorial Bridge across the Delaware River below Wilmington, Del., are, left to right, W. W. Mack, director, Delaware Crossing Division, Delaware State Highway Department (former chief engineer); Homer Seely, project engineer for Howard, Needles, Tammen and Bergendoff, consulting engineers for the project, and Ivan A. Hansen, resident engineer for that firm.



Forming Department of the Anchor-Hocking Glass Corporation Plant at Salem, N. J.—showing the unusual roof of Reynolds *Lifetime* Aluminum Industrial Corrugated. Roof is laid on steel purlins.

Anchor Hocking uses Reynolds *Lifetime* Aluminum Industrial Corrugated on Salem, N. J. Building

"A great name in glass" turns to aluminum . . . for roofing. This Industrial Corrugated is .032" thick, with extra deep corrugations for added strength. Rustproof and corrosion-resistant, it needs no protective painting . . . lasts indefinitely without maintenance. Lighter structural load affords framing economies. Radiant heat reflectivity takes off the summer sun load, makes winter heating more economical. Where under side is exposed, the bright aluminum improves illumination.

Application is simple, over any type of purlin. Reynolds supplies all necessary accessories for complete installations. If you have a special construction or building repair problem, call on our engineers. **Reynolds Metals Company,** Building Products Division, Louisville 1, Ky. Offices in 32 principal cities.

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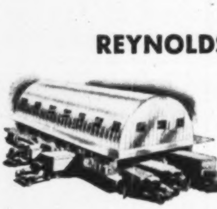

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BUILDING PRODUCTS

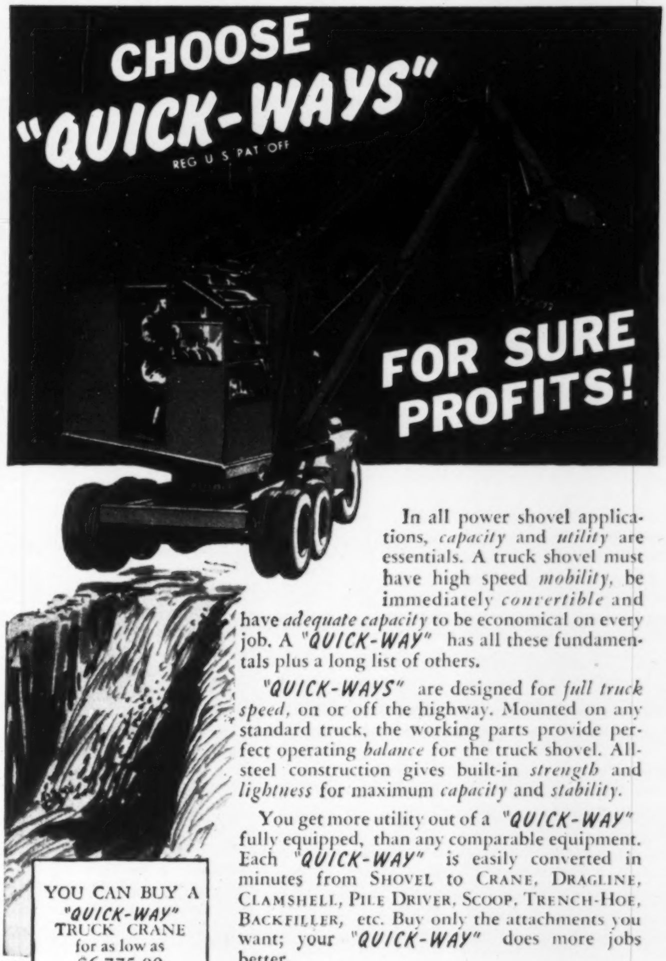
WORLD'S LARGEST PRODUCER OF ALUMINUM BUILDING PRODUCTS ice, Federal Security Agency. The Chicago office, at 225 West Jackson St., is the third of 14 proposed river basin offices being established to coordinate federal water pollution control activities with the state, interstate and local agencies as provided in the Water Pollution Control Act. Mr. Martin will work with the states in the Great Lakes region on the development of a comprehensive program for the abatement of water pollution. This will involve the location of sources of pollution, determination of the most suitable use for the stream and, ultimately, the determination of water quality standards.

Col. Richard W. Pearson has become district engineer of the U. S. Corps of Engineers at Jacksonville, Fla., succeeding **Col. Willis E. Teale,** transferred to Bremehaven, Germany, in the European Army Command.

Lt. Col. Jack P. Campbell has replaced Col. A. L. Lane as executive officer of the Great Lakes division, U. S. Corps of Engineers.

Col. Walter K. Wilson, Jr., St. Paul, Minn., district engineer for the last three years, has received orders to report at Mobile, Ala., to head the Mobile District of the Corps of Engineers. Colonel Wilson has supervised Corps of Engineers river and harbor and flood control projects of the Mississippi River drainage in Minnesota, parts of Wisconsin and Iowa and for the drainage of the Red River of the North in Minnesota and parts of North and South Dakota. He has also directed permafrost investigations, a study of construction methods on permanently frozen ground, which were conducted in Alaska by the St. Paul District.

In his office at Pickstown, S. D.—Corps of Engineers townsite at Ft. Randall Dam on the Missouri River—George O. Evans (seated), area engineer, checks a report on the dam construction progress with C. B. Stokes, his assistant. The dam will be almost 2 mi. long, 160 ft. high, and requires 30-million cu. yd. of earth embankment plus nearly 2-million cu. yd. of concrete.



In all power shovel applications, *capacity* and *utility* are essentials. A truck shovel must have high speed *mobility,* be immediately *convertible* and have *adequate capacity* to be economical on every job. A "QUICK-WAY" has all these fundamentals plus a long list of others.

"QUICK-WAYS" are designed for *full truck speed,* on or off the highway. Mounted on any standard truck, the working parts provide perfect operating *balance* for the truck shovel. All-steel construction gives built-in *strength* and *lightness* for maximum *capacity* and *stability.*

You get more utility out of a "QUICK-WAY" fully equipped, than any comparable equipment. Each "QUICK-WAY" is easily converted in minutes from SHOVEL to CRANE, DRAGLINE, CLAMSHELL, PILE DRIVER, SCOOP, TRENCH-HOE, BACKFILLER, etc. Buy only the attachments you want; your "QUICK-WAY" does more jobs better.

Parts are rugged and simple, requiring a minimum of servicing and having proved ability to take a life long beating. Many *interchangeable parts* and easy accessibility simplify maintenance and repair. From engine to attachment, every "QUICK-WAY" part will deliver its capacity rating and more.

The essentials built into every "QUICK-WAY" mean sure profits on a small investment; economical to buy, economical to use, it's one of the most useful machines you can own. There's a "QUICK-WAY" owner near you; ask HIM.

YOU CAN BUY A
"QUICK-WAY"
TRUCK CRANE
for as low as
$6,775.00
complete with
chassis
F.O.B. Factory
Write for full details

MODEL E:
4/10 cu. yd. cap., mounts on any standard 5-ton truck.

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PIONEER IN POWER SHOVELS FOR TRUCK MOUNTING AND STILL THE LEADER

MUNICIPAL AFFAIRS

Nashville Redevelopment

Excavation has started for the construction of the group of three state office buildings at Nashville, Tenn., to cost $5,000,000—one will be of 14 stories and two of 13 stories. This construction is the first step in the actual carrying out of the master plan for a $20,000,000 redevelopment project for the capital of Tennessee.

City officials have approved the program and the state, which already has a slum-clearance plan for the district around the state capitol, is expected to cooperate in the larger program.

The voters of Nashville and Davidson County, by popular referendum, have authorized the issuance of the bonds necessary to cover the cost of construction of the $5,000,000 municipal auditorium, while the state has agreed to cooperate with the city and the county in the building of a new Cumberland River bridge. Matching funds for this bridge are assured the city and county by the necessary legislation which has already been enacted.

The master plan calls for improvements mostly on Capitol Hill and it is focused around a proposed $500,000 four-lane boulevard 100 ft. wide. This new arterial route would start from the proposed new $2,000,000 bridge, connecting with Main Street in East Nashville.

Technician Dale Hawkins of the city planning commission says that about 64 acres of land would have to be bought to carry out the project, but that more than half of it could be resold later on at a figure which it is believed would pay for the whole development.

Paterson Studies Parking

The parking authority of Paterson, N. J., among the first to be formed under the new parking authority law of New Jersey, has engaged Knappen Tippetts Abbett Engineering Co. of New York to make an economic and engineering study of the automobile parking problem of that old city of 140,000 population.

A survey of parked cars in the central business district will be made between 8 a.m. and 6 p.m. on a weekday and between 6 p.m. and 9 p.m. on both a typical evening and on a shopping evening to determine the origin and destination of parkers, present parking pattern and volume and future parking demand. Based upon these and other data, a determination will be made of the number, type and location of off-street parking facilities required to relieve the present congestion.

In conjunction with J. B. Hanauer & Co., of Newark, N. J., and B. J. Van Ingen & Co. of New York City, investment consultants, financial studies will be made of each of the recommended facilities as a preliminary to their financing.

The Paterson Parking Authority consists of David R. Thompson, chairman; H. Howard Schoonmaker, vice-chairman; John A. Gavin, Archibald Krieger and Jas. V. Cosman.

Caster-Type Landing Gear

Approval of a 40-miles-per-hour cross-wind component for the DC-3 equipped with a cross-wind undercarriage has been announced by D. W. Rentzel, Administrator of Civil Aeronautics. In effect, this means that planes so equipped may provide airline service to single-strip airports anywhere in the United States with greater regularity of service than might be practicable with a standard undercarriage.

Two DC-3's, one owned by the Goodyear Aircraft Co. and the other by the CAA, were tested extensively before the approval was given. The CAA plane was tested along the West Coast, and the Goodyear crew, accompanied by CAA officials from Chicago, found conditions ideal at Lubbock, Tex. Both tests revealed that castered-gear planes can land safely in winds of any force up to 40 miles per hour, even if the winds are blowing at right angles to the runway.

"The successful conclusion of these tests by our flight engineering division," E. S. Hensley, director, Office of Aviation Safety, said, "means that air carriers may operate DC-3 aircraft equipped with the cross-wind undercarriage on runways directly across a wind as high as 40 miles per hour."

When caster-type landing gear is in common use, it is indicated that elaborate air fields will not be necessary in smaller communities.

Municipal Briefs

Public Works Commissioner Edwin G. Speyer of Buffalo, N. Y., reported he is "making progress" in his efforts to have New York Central Railroad officers join with the city in an application to the Public Service Commission for reconstruction of the Hamburg Street viaduct in Buffalo. The project would cost about $1,100,000, it is estimated.

Baltimore, Md., on Nov. 1 will ask for bids for 20,000 additional seats in the municipal stadium. Funds are to come from the $2,500,000 stadium loan. The board of estimate has also approved an engineering study of a proposed 700-car parking garage in the downtown area.

The Los Angeles City Council has approved a new city position, Public Works Administrator, with general executive jurisdiction over various bureaus under the Department of Public Works—with a probable $15,000 annual salary.

A preliminary statement as to how slum clearance and urban redevelopment projects may be initiated under the provisions of the Housing Act of 1949 has been sent to the mayors of all cities of 25,000 population and more by the Housing and Home Finance Agency. It outlines the slum clearance provisions of the act and prerequisites for participation by cities. Other questions answered include (1) types of local projects that can be assisted, (2) kinds of work and redevelopment activity that are eligible for federal assistance, (3) types of federal loans that are available to cities for slum clearance projects, (4) provisions for private financing, (5) requirements as to federal capital grants and local grants-in-aid, (6) and legal authority required for local participation in program.

The N. Y. City Housing Authority has named a new housing project on Manhattan's lower East Side "Baruch Houses," in honor of Dr. Simon Baruch, a Confederate physician in the Civil War. He pioneered in establishing health and bath facilities for the residents of the old cold water, walk-up tenements of the East Side, and persuaded the city to build the first public bath. When this bath was enlarged and modernized, Baruch Park was established by a gift from Bernard M. Baruch, son of the doctor, in honor of his father. Baruch Houses will occupy a 12-acre site, extending from East Houston St. to Rivington St. between Columbia St. and Baruch Place. The project will replace six blocks of slum buildings, almost all of them old law tenements, with 1,100 modern apartments in 6- and 14-story buildings.

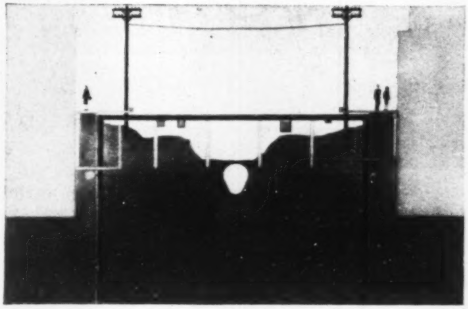
The Chamber of Commerce of the United States has issued a 40-page illustrated booklet on "Off-street Parking." It contains several photographs of typical off-street parking lots and garages constructed by private enterprise during recent years. Sections of the booklet outline what can be done to improve use of existing facilities and how businessmen can provide new facilities. Copies of the publication may be obtained from the Transportation and Communication Department, Chamber of Commerce of the United States, Washington 6, D. C., 40¢ each or three for $1.00. Larger quantities may be obtained at a special price.

The air pollution division of the Philadelphia, Pa., Department of Health has told Mayor Samuel that the smoke nuisance caused by coal-fed locomotives has been greatly reduced. The division reported monthly meetings have been held with the three railroads entering the city and many improvements have already been effected. The Reading and Pennsylvania Railroads have electrified all of their suburban trains and a great many of the through trains are hauled by either electric or diesel engines, retiring two-thirds of the steam engines.

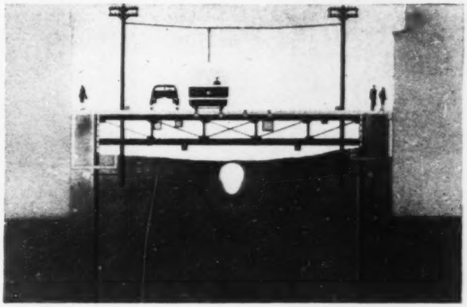
The Port of New York Authority has just issued an illustrated brochure for prospective concessionaires in the $24,000,000 bus terminal now being built in mid-Manhattan. Joseph M. Byrne, Jr., vice-chairman of the bi-state agency, says that more than 500 applications for space have already been received. The new terminal, to be connected by overhead ramp to the Lincoln tunnel from New Jersey, will handle about 130,000 bus movements daily, including 60,000 commuters.

The building code of Houston, Tex., being revised by City Design Engineer W. J. Curlin, will set up specifications for: Air conditioning and floor furnaces; mechanical refrigeration; attic ventilation; elevators and dumb waiters; mechanical amusement devices; and liquefied petroleum gases. All of these items are either not covered in the building code or are inadequately covered. Another provision of the revised code would require that all buildings of two stories or more have enough stairways so that no part of such a building is more than 100 ft. from a stairway.

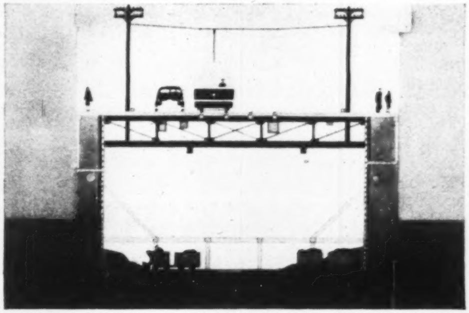
Toronto Builds a Subway



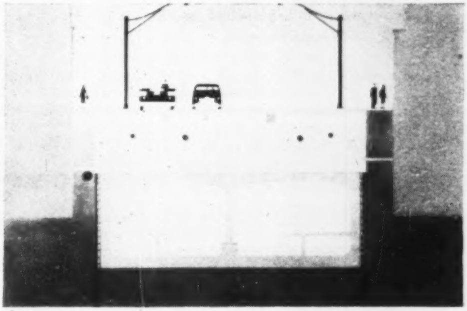
1 TORONTO'S YONGE STREET SUBWAY will be built as shown in these pictures. Here, 30 to 40 ft. steel pilings form wall to support buildings and support truss on which street rests. Main sewer, in center, has been relocated, as have utilities.



2 WORK STARTS IN SEPTEMBER. When it reaches stage above, it will be in the third phase, with truss in place and street decked over. Work will be done one block at a time, up to this point, so street will be disrupted as little as possible.

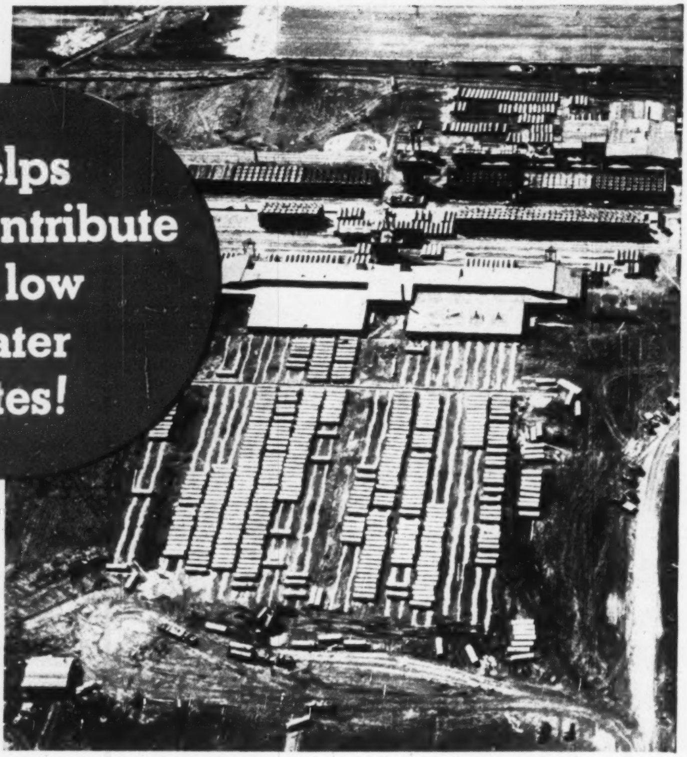


3 FOURTH STEP in the job will be excavation to bed rock and the construction of reinforced concrete retaining walls. This 4.6 mi.-tunnel will cost an estimated $29,000,000, is to be in service late in 1953. Excavation will total 1,500,000 cu. yd.



4 COMPLETED SUBWAY will look like this. Power lines will have gone underground, leaving street light poles only on street. Utilities have been relocated above the subway, where sand has been used as fill. Only buses and cars use street.

LOCK JOINT PIPE helps contribute to low water rates!



A temporary Lock Joint pipe plant at the site. Use of local labor and materials returns to the community a large part of the pipeline cost.

Although a modern water supply system represents a sizeable investment, sound engineering makes it possible to keep water rates at a minimum.

Knowing this, economy-minded water supply engineers specify Lock Joint Reinforced Concrete Pressure Pipe for mains of 16" or larger. Lock Joint's low initial cost, its long life, its exceptionally high carrying capacity and its negligible maintenance cost assure the utmost service for the consumer's dollar.

Water works officials who have installed Lock Joint pipe lines point to these lines as the most economical in their entire systems.

We shall be glad to discuss your requirements. Simply write or call our nearest office.

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SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

OBITUARY

Henry J. F. Waldeck, 57, Warren, Ohio, chief deputy county engineer for Trumbull County, and noted authority on bridge construction in Ohio, died Aug. 19. He had been with the county engineer's office in Warren and the Ohio Highway Department ever since he was graduated by Catholic University in Washington in 1914. He had served as chief deputy in the engineer's office the last 23 years.

Ray E. Watson, 55, Delaware, Ohio, county engineer for Delaware County, died Aug. 17. He took office Jan. 1, last.

Lionel Evans, 69, for 26 years superintendent of parks and playgrounds in Youngstown, Ohio, died Aug. 16. He was credited with having developed nine large parks, 22 playgrounds, several swimming pools, and a municipal golf course. He was elected mayor of Youngstown in 1935, and during his terms he initiated a $3,000,000 PWA project which improved the city's streets.

Allan M. Graves, 64, state highway engineer for the northwestern Minnesota district, died at Bemidji, Aug. 8.

Harry L. Life, 43, former engineer in the Elyria, Ohio, city engineering department, died Aug. 9.

Carl E. Rohde, 62, retired civil engineer, died at St. Louis, Mo., Aug. 8. He had retired June 1 as civil engineer for the International Shoe Co. Before the war for 28 years he had been with the Selden-Breck Construction Co.

Edmond C. Deberry, 69, superintendent of the Whitney Construction Co., died at Galveston, Tex., Aug. 11, while superintending the laying of pilings for the new $5,000,000 John Sealy Hospital at Galveston.

John A. O'Connor, of Upper Darby, Pa., an engineer with the Pennsylvania State Highway Department, died Aug. 10 at Philadelphia.

George F. Kohler, 66, a registered professional engineer, and a retired employee of the Philadelphia, Pa., Bureau of Engineering, Surveys and Zoning, died Aug. 11. He retired in 1947 after 45 years of service with the city of Philadelphia. He had been a member of the Philadelphia Board of Surveyors. He was in charge of all the surveying work in connection with the Sesqui-Centennial Exposition in 1926.

William T. Nardin, 52, of Moorestown, N. J., an engineer, died Aug. 11. He was president and owner of the Moorestown Engineering Co.

Adam Pearce Linton, 65, chief bridge engineer of the Department of Highways, Province of Saskatchewan, died Aug. 21.

Richard E. Cruickshank, 50, Warren, Vt., former chief engineer of the Works Progress Administration in Vermont, died Aug. 16. Mr. Cruickshank also worked as an architectural engineer in Central and South America. He attended the University of Vermont.

Paul Hunt, 80, Brookline, Mass., designing and construction engineer, died Aug. 21. He was graduated from Harvard in 1892 and studied later in England and Sweden. He had been vice-president of the Boston Structural Steel Co., and treasurer of the Excavating Equipment Co. He was also president of Paul Hunt, Inc.

Ludwig M. Naslund, 56, a civil engineer and construction superintendent of the John W. Cowper Co., Buffalo, N.Y., died Aug. 25. He was engineer in charge of construction of several mills at the Bethlehem Steel Co. plant in Lackawanna. He was superintendent of construction of the Pine Camp project near Watertown, N.Y., and the Huron Cement Co. plant in Buffalo. He had also been associated with the James Stewart Construction Co., New York; Stimm Construction Co., Buffalo, and as a construction engineer at the Socony-Vacuum Co. in Buffalo. He served 18 months with the Army Engineers in World War I.

Walter D. Hahn, 51, former city engineer of Wellsburg and Holliday's Cove, W. Va., died Aug. 23 at Steubenville, Ohio. A graduate of the engineering school of West Virginia University, Mr. Hahn spent his entire life in that state.

Thomas Jefferson Wilkerson, 80, who designed many Pittsburgh bridges, died Sept. 2 at Beaver Falls, Pa. He served as division engineer for Pittsburgh from 1909 to 1917 and during that time he designed the 6th, 7th and 9th St. bridges and the Manchester bridge.

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- Put your pile driving money on Super-Vulcan. It'll pay off. For this powerful pile hammer will give you a long lifetime of easy, efficient economical operation. It's dependable, simple in design . . . built to meet the requirements of experienced contractors for super speed on reduced steam.

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EDUCATION and RESEARCH

Extensive Research

The Armour Research Foundation of the Illinois Institute of Technology reports that it is heading for its biggest year. At the close of the first three-quarters of the 1948-1949 fiscal year, research volume already surpassed the total for all of 1947-48 when the foundation did a gross volume of research amounting to about $3,379,000.

Projected figures indicate that the foundation can expect a volume for the entire year in excess of $4,250,000. The figures, termed conservative estimates by Foundation Director Haldon A. Leedy, represent an increase over last year of about $850,000, or approximately 25 percent.

Research volume figures represent the amount of money invested by industry, governmental agencies, industrial associations, and individuals for the solution of technological problems, the development of new products and processes, and for the discovery of new scientific facts.

Of the 190 projects at the close of the first nine months, 105 were sponsored by industry, 48 by government agencies, and the foundation itself was sponsoring 37 from general funds allotted for fundamental research and for the organization's broad public service program. Fundamental projects generally are in quest of basic scientific knowledge which can be applied in the solution of the technical problems encountered by industry and government.

W. E. Mahin is director of research of Armour Research Foundation.

Structural Joints

Conclusions of vital interest to structural engineers may result from research on structural joints now under way. Some of these findings are given in a progress report just issued by the Research Council on Riveted and Bolted Structural Joints (ENR June 30, p. 5).

This report indicates, for example, that reversal of load has little effect on joints held by the clamping pressure of high-strength bolts. Also, field tests and laboratory investigations on railroad bridges show that bolts stay tight without locking devices.

The Council was organized in January, 1947, because it was generally recognized that existing practice in the design of riveted and bolted connections has been empirically developed from experience and that many of these practices are not supported by definite experimental data.

Seven projects have been approved in an effort to promulgate more economical and efficient practices, and considerable progress has been made on six of these. Thus far, the laboratory work has been done by the University of Illinois and Northwestern University.

Seven projects

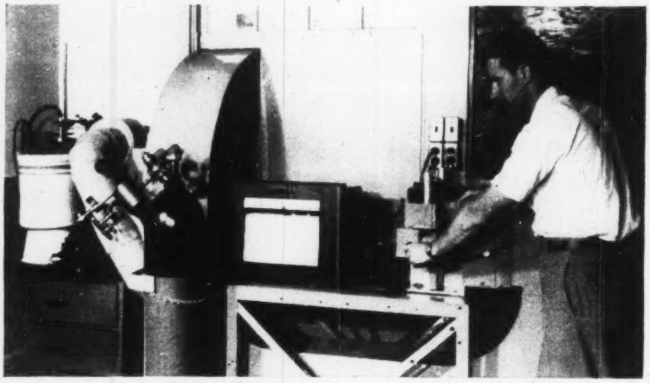
Projects are: (1) Effect of bearing pressure on static and fatigue strength of riveted joints. (2) Effect of rivet pattern on static strength of structural joints. (3) Strength of rivets in shear and combined shear and tension. (4) Fatigue strength of bolted structural joints. (5) Effect of grip on the fatigue strength of riveted and bolted joints. (6) Fatigue strength of high-strength steel riveted joints. (7) Effect of rivet pattern on the fatigue strength of structural joints.

T. R. Higgins, director of engineering, American Institute of Steel Construction, is chairman of the Council. Copies of the progress report may be obtained from G. M. Magee, research engineer, Association of American Railways, Engineering Division, 59 East Van Buren St., Chicago 5, Ill., on written request.

Educational Notes

The National Institute of Health in Washington, D. C., has made a grant to Ohio State University, Columbus, for a project concerned with industrial waste. It is being carried on at the university experiment station under joint sponsorship of the health group and the Federation of Sewage Works Associations.

The granting of a $10,000 scholarship fund to the Georgia Institute of Technology by Jesse H. Jones, Houston financier and former Secretary of Commerce, has been announced by President Blake R. Van Leer. The fund is being made in honor of General Lucius D. Clay, who is referred to in the scholarship grant as a "professional engineer, and a great American soldier, statesman, and patriot." The fund, which is to have a life of ten years, was made by Mr. Jones through Houston Endowment Inc., a philanthropic corporation endowed by Mr. and Mrs. Jones to support charitable, educational and religious undertakings. During the lifetime of the fund, General Clay will have the privilege of nominating candidates to receive the scholarship benefits, providing his candidates are found qualified to receive the assistance under the rules and regulations that have been adopted by the scholarship committee of the institute.



STUDYING "SMOG"—To aid in investigating the causes and effects of smog in the Los Angeles area, scientists in the Air and Water Pollution Laboratory of Stanford Research Institute, Palo Alto, Calif., have developed this transmissometer. The equipment is capable of measuring, under controlled conditions, the decrease in intensity of a light beam traveling through long paths of air polluted with low concentrations of the atmospheric impurities being studied. The transmissometer's complete system includes a 40-ft.-long chamber through which the test air passes; apparatus for generating and mixing in the desired amount of contaminant; and a source of light which sends out a beam of modulated light of constant intensity. A system of mirrors reflects the light beam back and forth throughout the full length of the chamber until it hits an analyzer which measures its final intensity. Luman F. Ney, associate chemist on the SRI staff, is shown operating the amplifier and phototube unit of the transmissometer.

Elections and Activities

New officers of the North Carolina Water Works Operators Association were elected as follows: R. S. Phillips of the Charlotte water department, president to succeed Max Saunders of the Chapel Hill water department, past president. G. R. Reynolds, assistant superintendent of the Leaksville water works was named vice-president, and Stan Harris of the Winston-Salem water department was named secretary-treasurer.

Four building experts have been named by Mayor Bernard Samuel of Philadelphia to serve as members of the city's board of standards and appeals in connection with the new building code. They are Gerhard J. Lauter, a professional engineer; M. Edmunds Dunlap, an architect and Thomas S. Keefer and Thomas E. Bruder.

MAJOR MEETINGS

Public Works Congress and Equipment Show, Municipal Auditorium, Kansas City, Mo., Sept. 18-21.

Institute of Traffic Engineers, Wardman Park Hotel, Washington, D. C., Sept. 25-28.

American Society of Planning Officials, Hotel Statler, Cleveland, Ohio, Oct. 10-12.

American Society for Testing Materials —First Pacific Area National Meeting, Fairmont Hotel, San Francisco, Calif., Oct. 10-14.

Federation of Sewage Works Associations, Hotel Statler, Boston, Mass., Oct. 17-20.

Metal Congress and Exhibition, Public Auditorium, Cleveland, Ohio, Oct. 17-21.

American Public Health Association, Hotel Satler and Hotel New Yorker, New York City, Oct. 24-28.

37th National Safety Congress, Stevens Hotel, Chicago, Oct. 24-28.

National Conference on Industrial Hydraulics, Sheraton Hotel, Chicago, Ill., Oct. 26-27..

National Congress on Industrial Hydraulics, Sheraton Hotel, Chicago, Oct. 26-27.

Engineers Council for Professional Development, Edgewater Beach Hotel, Chicago, Oct. 28-29.

National Reclamation Association, Hotel Newhouse, Salt Lake City, Utah, Nov. 2-4.

American Society of Civil Engineers, fall meeting, Hotel Statler, Washington, D. C., Nov. 2-4.

National Council of State Boards of Engineering Examiners, Sheraton Plaza Hotel, Daytona Beach, Fla., Nov. 10-12.

National Association of Housing Officials, Hotel Statler, Boston, Mass., Nov. 13-16.

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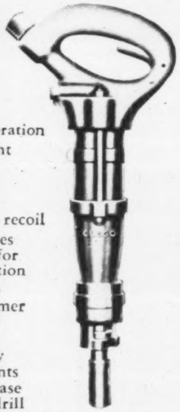

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UNIT PRICES BID BY CONTRACTORS

Bridge widening job let by Colorado Highway Dept.

Five of eight bids submitted to the Colorado State Highway Department for grading and bridge construction in Larimer County were below the engineer's estimate. Mark V. Watrous, state highway engineer, on July 26 recommended award of the work to Baab Construction Co. for its low $96,588 bid.

Clearing and grubbing, excavation, grading, concrete, reinforcing steel and timber piles were among 48 separate items of construction included. Five structures, which with approaches total 0.3 mi., are affected; narrow bridges are to be widened. This is part of a highway improvement of widening the route from Denver to Ft. Collins where present unimproved structures are but 18 ft. in width, causing a real traffic hazard.

All materials will be furnished by the contractor and can be brought to the job by rail and highway. The following wages are to be paid on the job: skilled labor, $1.10; semi-skilled, $.70; and unskilled labor 50¢ per hour. Construction is to be completed in 300 calendar days.

Cement-treated base for California pavement

In Kern County, the California Division of Highways will build a mile of asphalt-surfaced concrete pavement on imported borrow and a cement-treated subgrade. Griffith Co, of Los Angeles was the low bidder of three, on Aug. 3, with a total of $309,533. High was $351,104.

Major quantities include 46,000 sq. yd compacting original ground, 17,000 cu. yd. imported borrow, 41,600 sq. yd. mix and compact cement-treated subgrade, 9,625 cu. yd. concrete pavement, 2,700 tons mineral aggregate plant mix surfacing.

Firms bid on piles for mooring dolphins

General Construction Co., of Portland, Ore., underbid two other contractors on construction of 22 mooring dolphins at 11 locations in the 63-mile reach of the Columbia River between the mouth of the Willamette and Puget Island bar.

The 4-pile dolphins bring the total length of Douglas fir piling to be driven to 5,584 lin. ft. Also included in the contract are 4,000 lb. of hardware and 5 m.f.b.m. of lumber. Materials are to be supplied and put in place by the contractor for his bid price. Low bid totaled $7,392; $8,380 was high.

Boston bridge surfacing attracts 13 contractors

The Boston firm of Marrinucci Bros. & Co., Inc., bid $533,084 to be low on roadway reconstruction for Harvard Bridge over the Charles River between Boston and Cambridge. Bids were opened Aug. 11 and the contract was awarded.

The old roadway will be replaced by 2,200 ft. of open grating filled with concrete with a rough, non-skid surface. No materials are to be furnished by the owner, Metropolitan District Commissioner, Commonwealth of Massachusetts. Pay rates on the project will vary from $1.65 for common labor to $2.60 per hour for skilled.

Thirteen contractors entered bids which ranged from the low to a high of $679,915. Coleman Bros. Corp., of Boston, was second low with a $539,260 tender.

Drainage works award goes to O'Connor Bros.

A drainage system 20.2 mi. long, including channel excavation, pipelaying, culvert construction and placing of riprap, is to be built by O'Connor Bros., of Red Bluff, Calif., for the California Division of Highways and Public Works. The successful bidder was low of four bidders with $45,344 as his proposal.

There were 18 separate items bid on including those mentioned above. In general, bidding was close; one item on which considerable variation occurred was the supply of 1,505 cu. yd. of imported borrow. No materials are to be supplied by the owner.

As a condition of the contract, the owner reserved the right to increase or decrease the amount of work as the engineer might deem advisable when the project is under way.

Unit price reports on jobs cited in these columns will be mailed to readers of Engineering News-Record on request at no charge. Address: Manager, Business News Dept., Engineering News-Record, 330 W. 42nd St., New York 18, N. Y. Identify by quoting headline as used herewith, and be sure to give full mailing address.

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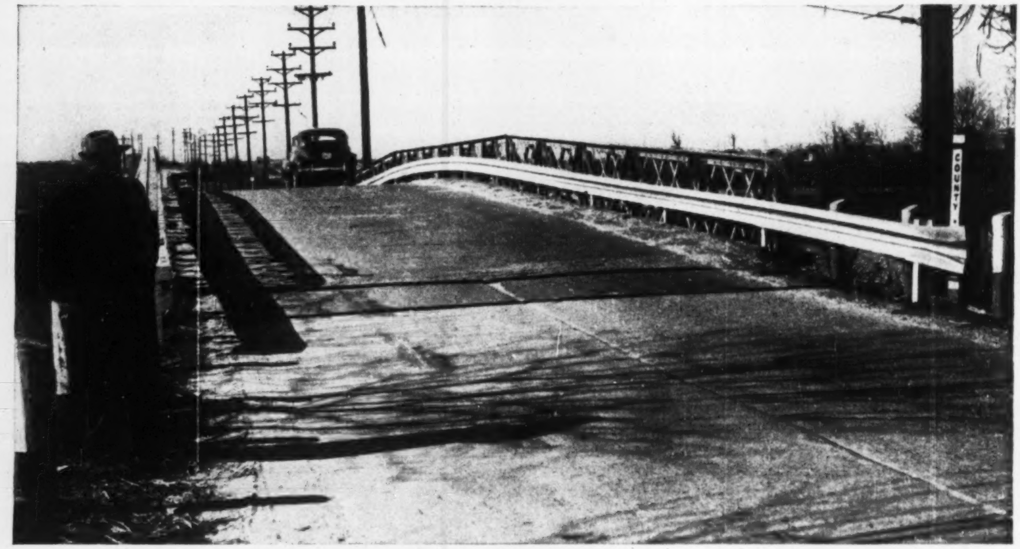

Showing Safety-Beam installed on bridge over Pennsauken Creek, River Road, Palmyra, N. J. Contractor: Eugene F. Verga, Inc., Camden, N. J.

You Can Be Sure with Safety-Beam

First step in installing Safety-Beam. Driving Bethlehem steel posts along highway near Freemansburg, Pa. Contractor: L. S. Lee & Son, Harrisburg, Pa.

Safety-Beam Guard Rail protects motorists at this sharp turn on Route 7, Gallipolis, Ohio. Contractor: Harvey Candel, Bucyrus, Ohio.

You can be sure of constant, dependable protection for motorists when you install Bethlehem Safety-Beam Guard Rail at danger points along highways.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

September 22

Mass., Boston — Commonwealth of Massachusetts, Metropolitan Dist. Comn., 20 Somerset St., Boston, Contr. 186, pipe line connection for Blue Hills Reservoir, Boston, Quincy, and Milton, inc. 31,000 ft. cut and cover aqueduct, appurtenant structures, etc. Plans deposit $10. Karl R. Kennison, ch. engr. adv. ENR 9/8. CD 5/12/44.

Ont., Burlington—Inter Urban Area of Burlington, Nelson A. Wilson, secy., Burlington, filtration plant extens., Approx. $50,000. Plans deposit $20. CD 12/20/45.

September 26

S. D., Huron—City, Huron, water softening plant, $175,000. E. H. Dunmire, 2774 South St., Lincoln, Neb., engr. CD 7/27, under LB.

September 27

Ariz., Phoenix—City, 2 Ave. and Washington St., 18,000 ft. section of 60-in. water transmission line from Verde River, Maricopa Co., $500,000-$600,000. R. Gall Baker, City Hall, city engr. CD 11/29/46.

September 28

Mo., Festus—City, Fred D. Isenman, mayor, City Hall, 500,000 gal. water storage reservoir. Plans deposit $5. Russell & Axon, 408 Olive St., St. Louis, Zone 2, Mo., engrs.

Pa., Phila.—Dpt. Pub. Wks., Bureau of Water, City Hall Annex, construct preliminary treatment plant and appurtenances, incl. concrete basins, substructure of chemical bldg., conduits, shafts, sewers and appurtenant structures, furnishing and installing mixing and sludge collection equip., meters, valves, piping, sluice gates and appurtenances, at Queens Lane Filter Plant. 126-WWI. Plans deposit $25. adv. ENR 9/1. CD 4/28.

LOW BIDDERS

Ind. Bedford—Bd. P. Wks., Bedford, WW imprvs., from filtration plant to pumping station from Stone City Constr. Co., Bedford, **$120,200**; main distr. sys., from R. Green Constr. Co., Vincennes, **$365,470**; pumping plant and filtration plant imprvs., from Dravo Corp. K. of P. Bldg., Indianapolis, **$70,982.** Est. $500,000. CD 8/11

CONTRACTS AWARDED

Que., Montreal—Municipality, supply and installation electrical equip. etc., McTavish Pumping Station, to Canadian Comstock Co. Ltd., 2531 Walkley Ave., **$220,402.** Bids 7/30. CD 7/11.

Que., St. Ramauld—Municipality, artesian wells, to Parco Drilling Co. Inc., 111 Mountain Hill, Quebec City, **$135,000.**

SEWERS, WASTE DISPOSAL

BIDS ASKED

September 20

Mo., Mexico—City, John Cadwell, city clk., City Hall, 7 mi. 8- to 21-in. sanitary sewers, auxiliaries and appurtenances, etc., Plans deposit $10. Horner & Shifrin, Shell Bldg., 1221 Locust St., St Louis, Zone 3, Mo., engrs. CD 10/21.

September 27

Calif., Porterville—State Div. Architecture, P. Wks. Bldg., Sacramento, sewage disposal plant and water storage reservoir at Institution for Epileptics. Plans deposit $25. Anson Boyd, Sacramento, state archt.

LOW BIDDERS

Ga., Milledgeville — Baldwin Co., Milledgeville, Aug. 30, sanitary sewer imprvs., from Ridlehuber & Co., Greenwood, S. C., **$128,347.** CD 8/10.

●**New York**—President Queens Boro, 120-55 Queens Blvd., Kew Gardens, Zone 15, Aug. 30, storm sewers and appurtenances, Horace Harding Blvd. and 99 St.; combined sewer and appurtenances, 99 and Xenia Sts., Horace Harding Blvd.; sanitary sewers and appurtenances Horace Harding Blvd. from T.&T. Constr. Co. Brookville Blvd., Rosedale, **$1,780,422.** Est. $2,447,917. CD 8/11.

Pa., Phila.—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Aug. 31, general constr. incl. mechanical, sewage disposal plant addns. at Philadelphia (Byberry) State Hospital from R. M Luff Constr Co., York and Welsh Rds., Willow Grove, **$177,000.** CD 8/11.

Pa., South Connellsville—South Connelsville Sewage Auth., Box 3, Aug. 23, facilities for treatment plant and sewage disposal from Ruth Constr Co., Scottdale, **$285,000.** CD 8/10.

CONTRACTS AWARDED

Fla., Jacksonville Beach—City, Jacksonville Beach, Proj. A, laying 30,000 lin. ft. vitr. clay sewer pipe line and approx. 106 sewer manholes, and constructing six sewerage pumping stations, to B. B. McCormick & Sons, Jacksonville Beach and Girvin & White, Jacksonville, **$126,398** and **$138,343** respectively. Bids 8/29. CD 8/16.

Ont., Peterborough — City, A. E. Outrame, city clk., alterations and extens. sewage treatment plant, to George Hardy Ltd., 163 Wicksteed Ave., Leaside. Approx. **$483,662.** Bid 8/8. CD 7/11.

BRIDGES

BIDS ASKED

About September 29

†**Kan., Kansas City**—U. S. Eng., 601 Davidson Bldg., Zone 8 furnishing and installing lifting mechanism for Union Pacific Railroad Bridge, over Kansas River, Serial No. CIVENG 23-028-50-32.

September 29

†**Kan., Kansas City**—U. S. Eng., 601 Davidson Bldg., Kansas City, 8, Mo., installing lifting mechanisms for Union Pacific Railroad Bridge. Serial No. CIVENG 23-028-50-32. CD 8/31.

On or About October 4

†**Georgia**—U. S. Eng., P. O. Box 1169, Mobile 7, Ala., constructing superstructure and roadway for Allatoona Creek Crossing, Bethany Rd., Bartow Co., Serial No. CIVENG-01-076-50-9.

October 4

†**N. Y., Montour Falls**—U. S. Eng., Engineer Park, Buffalo, Zone 7, foot bridge, Oswego River Basin, Catharine Creek, Inv No CIVENG 30-023-50-13. CD 12/29/44.

LOW BIDDERS

California—State Div. Hys., Sacramento, Aug. 31, repairing 5 bridges between San Simeon and Carmel, Monterey Co., from Wm. Radtke & Son, Box 671 Gilroy, **$128,171.** CD 8/8

Connecticut—State, G. Albert Hill, state hy. comr., Hartford, Aug. 29, 192 ft span bridge over Naugatuck River carrying south Leonard St., Waterbury, from Della-Bitta-Bassola, Inc., Working St., Plantsville, **$96,392;** viaduct over Mill, Baldwin St and Mad River and N. Y., N. H. & H. R R Co, and part of Waterbury Expressway, Waterbury, from Munroe-Langstroth, Inc, North Attleboro, Mass., **$529,224.**

Kentucky—State Hy. Dpt., Frankfort, Aug. 26, bridge and traffic bound limestone 1.815 mi. approaches, Scottsville-Smiths Grove Rd. (Ky 101), Allen and Warren Counties, from Codell Constr. Co. Inc., Winchester, **$136,497.** bridge and c. conc. 0.159 mi. approaches Greensburg-Columbia Rd., SP 44-56, F 143 (5), Green Co., from Harry O. Wyse, Lexington, **$399,889*****repair to bridge Tejay over Cumberland River, RS 7-664, U. S. 119, Tejay Rd., Bell Co., from R. R. Dawson Bridge Co., Bloomfield, **$59,693.**

bridge and traffic bound limestone 0.08 mi approaches, Elkhorn Creek, Pisgah-Mt. Vernon-Shannon Rd., RS (120-175) (105-95), from Allen-Codell Co. Inc., Winchester, **$50,935*****bridge and traffic bound limestone 0.129 mi. approaches, Davistown-Great Crossing Rd., RS (120-155) (105-194), Scott and Woodford Counties; bridge and traffic bound limestone 0.217 mi. approaches, Faywood, Wallace-Faywood Rd., RS 120-195, from H. C. Adams, 968 Delaware Ave., Lexington, **$52,805** and **$52,537** respectively. CD 8/10.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

- Water Supply
- Sewers, Waste Disposal
- Bridges
- Streets & Roads
- Earthwork, Waterways
- Latin America
- Public Buildings
- Commercial Buildings
- Industrial Buildings
- Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
●	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

La., Shreveport—City, City Hall, viaduct with approaches, Allen - Dalzell - Linwood grade separation proj., from Cook Constr. Co., Standard Lift Bldg., Jackson, Miss., **$588,156.** CD 12/27.

●**Maryland**—State Hy. Dpt., Baltimore, Sept. 1, island construction, Chesepeake Bay Bridge, Contr. CBB 10-11-87, Stevensville and Sandy Point, Queen Annes and Anne Arundel Counties, from Construction Aggregates Co., 1 E 42 St., New York, N. Y., Scheme A, 150x225 ft. **$2,239,000;** Scheme B, 138x150 ft **$1,878,750.** CD 8/23.

Missouri—State Hy. Dpt., Jefferson City, Aug. 26, wid'n three 30 ft. rein.-con. deck girder to 48 ft. bridge over Moline Creek, road from Paul St. Ferguson South to Rt. 115, TR, Rt. SN Proj. U 603 (2), Sta. 141 plus 63; two 9 ft. rein.-con. slab span bridges over Ralls Creek road from Paul St. Ferguson South, Rt. SN Proj. U 603 (2), Sta. 153 plus 64, both St. Louis Co., from Fred Weber Contractors Inc., 7929 Alabama St., St Louis, **$68,365** and **$50,164** respectively.

two 55 ft. and two 70 ft. continuous and four 35 ft. I-beam span bridges over Gasconade River, road from near St. George east to Mane, Rt. SP Proj. S 482 (2), Sta. 711 plus 16, Wright Co., from Midwest Precote Co., 7600 E. 17 St., Kansas City, **$53,716*****two 12 ft. rein.-con. slab spans, bridge over branch of Howell Creek, road from Rt. 14 south to West Plains, Rt. 63, Proj. F 51 (10) A, sta. 1266 plus 45, Howell Co., from W. J. Menifee Constr. Co., Sedalia, **$336,102.** CD 8/15.

North Carolina—State Hy. and Pub. Wks. Comn., Raleigh, Aug. 30, reconstruct bridges at Bell, Jackies and Town Creeks on U. S. 17, near Wilmington, Proj. 3101, Brunswick Co., from Wilson Constr. Co. Box 603, Salisbury, **$57,252;** est. $50,000-$75,000***structures 3 mi. N. C. 603 from point 1 mi. west of Sugar Grove, west to a point 7.7 mi east of Tennessee State Line, Proj. 7752, Watauga Co., from John H. Brinkley, Thomasville, **$52,894,** est. $50,000-$75,000. CD 8/19.

●**Virginia**—State Hy. Dpt., Richmond, Sept. 1, substructure for bridge over York River at Yorktown, York and Gloucester Counties, from Massman Constr Co., 71 By-Pass St., and Kansas City Bridge Co., B.M.A. Bldg., both Kansas City, Mo., **$4,690,232;** superstructure of double-leaf swing span at Yorktown, from Virginia Bridge Co., 821 Madison Ave N.E., Roanoke, **$2,424,711.** CD 7/18.

CONTRACTS AWARDED

California — State Div. Hys., Los Angeles, rein.-con slab bridge across Compton Creek Channel and Santa Fe Ave., Los Angeles Co., to George W. Petersen & T. W. Baker, 6035 Barton Ave., Hollywood, **$186,007** Bids 7/21. CD 6/27.

Georgia—State Hy. Dpt., Atlanta, 2 bridges on Cairo-Pelham Rd., one bridge, approaches at Gin Creek, approx. 3 mi. north of Cairo and other bridge, approaches at Barnetts Creek, approx. 3.9 mi. south of Pelham, Proj. ER-F-1 and ER-F-2, Grady and Mitchell Counties, to Leo T. Barber, Moultrie, **$50,000*****bridge, approaches over Big Slough on Bainbridge-Camilla Rd., approx. 3 mi. N. E. on Bainbridge, Proj. ER S-5, Decatur Co., to Cadell & Jackson, 2014 Dennis St., Jacksonville, Fla., **$54,875*****bridge, approaches at Ochlocknee River on Coolidge-Ochlocknee Rd., Thomas Co., to Scott Constr. Co., Thomasville, **$51,873*****bridge at Walker Swamp Creek, and bridge culvert, approaches at Seals Creek, approx. 2 mi. south of Woodbine and 6.5 mi. south of Woodbine on Kingsland Brunswick Rd., FI-009-1 (1), Camden Co., to H. G. Smith, Fitzgerald, **$79,889*****3 bridges at Satilla River and Fullwood Creek on Waycross-Douglas Rd., Proj. S 0589 (2), Ware Co., to W. J. Tidwell, Jr., Douglasville, **$138,076*****bridge, reconstructing 2 bridges, approaches on Camilla-Sylvester Rd., bridge located near the city limits of Camilla and reconstructing bridges at Racoon Creek, approx. 11 mi. north of Camilla Proj. S-09-42 (1), Mitchell Co., to H. M. Pafford, Jr., Waycross, **$61,555.** Bids 8/26. Grand total $436,268. Bids 8/26 awarded 8/30. CD 8/17.

Iowa—State Hy. Dpt., Ames, bridges and culverts, S-74 (2) Group 1 and Group 2, Jones Co., to R. M. Wilson, Guttenberg, **$102,956.** CD 8/23, under LB.

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●**Maryland** — State Hy. Dpt., Baltimore, to Merritt-Chapman & Scott Corp., 17 Battery Pl., New York, N. Y., Piers 1 to 11 (inclusive) Contr. CBB 10-6-87 **$630,854**, CD 7/26, under LB; Piers 41 to 57 (inclusive) Contr. CBB 10-7-87, **$976,727**, CD 7/29, under LB; Piers 32 to 40 (inclusive) Contr. CBB 10-3-87, **$4,265,669**, CD 7/15, under LB.***to J. Rich Steers, 17 Battery Pl., New York, N. Y., Piers 24 to 27 (inclusive) Contr. CBB 10-9-87 **$3,493,148**, CD 8/11, under LB.***to Frederick Snare Co., 233 Broadway, New York, N. Y., Piers 23 and 28, Contr. CBB 10-9-87, **$4,698,615**; Piers 11 to 22 and 29 to 31 (inclusive) Contr. 10-2-87, **$3,024,554**, CD 7/11, under LB.***to Booth & Flinn, 1942 Forbes St., Pittsburgh, Pa., west abutment and bents 1 to 29 (inclusive) Contr. CBB 10-4-87, **$495,566**, CD 7/18, under LB.***to Baltimore Contractors, Inc., 711 S. Central Ave., Baltimore, east abutment and bents 30 to 65 (inclusive), Contr. DBB 10-5-49, **$544,010**, CD 7/22, under LB. all above for Chesapeake Bay Bridge, Sandy Point and Stevensville, Anne Arundel and Queen Anne Counties, Grand total **$18,129,143**.

New York—Bureau Contracts & Supply, The Governor Alfred E. Smith State Office Bldg., Albany, 3.32 mi. pavement on approaches to new bridge over Chemung River Rte. 17, Corning, Steuben Co., to Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, **$995,493**. Bids 6/13. CD 7/15, under Streets and Roads, LB

STREETS AND ROADS

BIDS ASKED

September 27

Del., Wilmington—Pres. of Levy Court of New Castle Co., Public Bldg., imprv. McDaniel Crest, Brandwine Hundred, Contr. SD-22. Plans deposit $2. John I. Cahalan, co. engr.

Bids Asked

O., Cleveland—Bd. Comrs., Cuyahoga Co., Frank Husak, clk., Courthouse, Lakeside and Ontario Sts., wid'n. and b. conc. E. 49 St. $76,000. Plans deposit $10. CD 11/12/43.

Tex., Houston—Southcrest, Inc., c/o M. F. Satterwhite, 4151 Lanark Lane, construct and asph. paving streets, Sect. 2 of Southcrest Addn. $60,000.

LOW BIDDERS

Arizona—State Hy. Dpt., Phoenix, rejected bids Aug. 12, paving 6.5 mi. Flagstaff-Winslow Hy., Coconio Co., L. B. **$139,564**. CD 8/5.

Calif., Vallejo—City, City Hall, Aug. 24, wid'n. Tennessee St., from Jensen & Pitts, 921 2 St., San Rafael, **$113,311**. CD 8/10.

Colo., Denver—City and County of Denver, City & County Bldg., Aug. 26, street imprvs. District No. 164, from Martinson Constr. Co., 5400 Colorado Bldg., Denver, **$212,699**. CD 8/18.

Georgia—State Hy. Dpt., Atlanta, Aug. 26, resurf., repairing broken base State Rt. 87, Macon-Cochran Rd., beginning at intersection U. S. Rte. 80 south of Macon and ending at concrete pavement in Cochran, State Aid Proj. SAP 944 (4), Bibb Twiggs and Bleckely Counties, from Shepherd Constr. Co., Inc., 2450 Briarcliff Rd. N. E., Atlanta, **$181,108**. CD 8/17.

●**Kentucky**—State Hy. Dpt., Frankfort, Aug 26, from Hart & Hart, Providence, grade, drain and traffic bound limestone 2.527 mi Princeton-Providence Rd., S 391 (3) SP 54-400, Hopkins Co., **$123,366*****from George H. Cheek, McClure Bldg., Frankfort, grade, drain, traffic bound limestone 5.566 Gordon-Cornettsville Rd., S 133 (2) SP (67-419) (97-662), Perry and Letcher Counties, **$247,106*****from W. C. Snider, Danville, grade, drain, traffic bound limestone 4.722 mi. Oliver-Powersville Rd., S 159 (1) SP 101-61, Robertson Co., **$61,252**; grade, drain and traffic bound limestone 1.083 mi. relocation U. S. 27, through Burnside, SP 100-335, Pulaski Co., **$121,081**; traffic bound limestone 7.116 mi. Tompkinsville-Sulphur Lick-Barren Co. line Rd., RS 86-294, Monroe Co., **$102,926**.

from Lovell & Hart Constr. Co., 1091 Manchester St., Lexington, traffic bound limestone 1.406 mi. Spring Fork-Magoffin Co. line Rd., SP 13-447, Breathitt Co., **$78,215*****from Rollin P. Yates Constr. Co., Glasgow, traffic bound limestone 10.243 mi. RS 5-452 and RS 5-492, Barren Co., **$67,732*****from Arnett Constr. Co., Berea, traffic bound limestone 4.413 mi. Beverly Rd., RS 7-564, **$110,637**; traffic bound limestone 8.655 mi. Hodenville-Sonora-East View Rd., RS 47-159, Hardin Co., **$52,361*****from Ruby Constr. Co., Madisonville, reconstruction and traffic bound surf. 8.778 mi. Hopkinsville-Church Hill, Hy 117 Rd., RS 24-665, Christian Co., **$59,370*****from Stephens-Jeffrey Co. Tompkinsville, traffic bound limestone 1.803 mi. Waterview-Mud Camp-Tompkinsville Rd., RS 29-147, Cumberland Co., **$63,227**.

from R. B. Tyler Co., 1446 Levering St., Louisville, traffic bound limestone 6.759 mi. RS 43-435 (1) RS 43-435 (2) RS 43-455 Crayson Co., **$58,008**; traffic bound limestone 3.413 mi. Bethesda-Tennessee State Line Rd., RS 116-79, Wayne Co., **$60,237*****from Kentucky Road Oiling Co. and J. Sneed Yager, 315 High St., Frankfort, bit. surf. Class C-1, 11.53 mi. Group 1, RS 48-448, 48-588, 48-728, 48-648, 48-668, 48-128, 48-88, 48-688, 48-68, 48-248, 48-608 (1), Harlan Co., **$203,910**.

from Nally Ballard & Hamilton, Bardstown, traffic bound limestone 9.747 mi. Group 2, RS 48-628, 48-68, 48-568 (2), 48-708, 48-568 (1) 48-508, 48-608, Harlan Co., **$230,436***** from Tye & Wells, Carrollton, traffic bound limestone 0.486 mi. Cynthiana-Stonewall Rd., bridge, RS 49-152, Harrison Co., **$53,821***** from Licking River Limestone Co., West Liberty, traffic bound limestone 2.019 mi. RS 60-278 and RS 60-298, Knott Co. **$101,279*****from Gorman Constr. Co., Flemingsburg, traffic bound limestone 8.511 mi. Vanceburg Kinniconick-Mt. Carmel Rd. (Ky 24) Lewis Co., **$169,872.**

from Nally & Gibson, Springfield, traffic bound limestone 5.654 mi. Cassady Store Tody Hill Rd., RS 85-244, Metcalfe Co., **$65,295*****from LaGrange Engrg. & Constr. Co., LaGrange, traffic bound limestone 7.306 mi. Monticello-Gregory Rd., RS 116-179, Wayne Co., **$54,267*****from Regenhardt Constr. Co., Manchester, traffic bound limestone 1.319 mi. Gregory-Pueblo Rd., RS 116-199, Wayne Co., **$58,946*****CD 8/10.

●**Missouri**—State Hy. Dpt., Jefferson City, Aug. 26, c. conc. 2.618 mi. road from Paul St. (Ferguson) S. to Rt. 115TR, Rt. SN Proj. U 603 (2), St. Louis Co., from Fred Weber Contractors Inc., 7929 Alabama St., St. Louis, **$467,253*****c. conc. 1,392 mi. road from St. Charles Rock road Natural Bridge Rd., Rt. SEE, Proj. S. 379 (1), St. Louis Co., from Paul Krummel & Israil Bros., Clayton, **$179,431*****c. conc. 0.820 mi. road from Rt. 14, south to West Plains, Rt. 63, Proj. F 51 (10)-A, Howell Co., from M. E. Gillig, Monett, **$69,054*****c. conc. 4.136 mi. road from Rt. 14, south to West Plains, Rt. 63, Proj. F 51 (10)-A, Howell Co., from W. J. Menifee Constr. Co., Sedalia, **$303,917.** CD 8/15.

New York—President Queens Boro, Boro Hall, 120-55 Queens Blvd., Kew Gardens, Zone 15, Aug. 29, regulating, grading, regrading, curbing, recurbing, flagging, reflagging, construct drains, etc. in College Point Causeway from 25 Rd. at 122 St. to Whitestone Bridge Blvd.; asph. macad. paving two 22 ft. strips in College Point Causeway from 28 Ave. to Whitestone Bridge Blvd., asph. macad. paving from 27 to 28 Aves., from Flushing Asphalt Corp., 32-17 Lawrence St., Flushing, **$90,249.** Est. $147,846. CD 8/22.

North Carolina—State Hy. and Pub. Wks. Comm., Raleigh, Aug. 30, from Towles-Cline Constr. Co., Box 1617, Wilmington, STBC, sand asph. surf. 4.45 mi. from end of bit. surf. tr. in Rocky Point, southwest to U. S. 421, Proj. 3,400, Pender Co., **$59,028.** Est. $50,000-$75,000 sand asph. surf. 8.92 mi. from Phoenix toward Acme 3.7 mi. in Brunswick Co. and various sects. in vicinity of Winter Park and Wrightsville Beach in New Hanover Co., Betterment Sect. 3-7-28-16, Brunswick and New Hanover Counties, **$53,896.** Est. $50,000-$75,000.

from Dickerson, Inc., Box 391, Monroe, bit. concrete binder and surf. 14.9 mi. N.C. 95, 561, 125 and U. S. 258, between Lawrence and Nash county line, and between Tillery and U. S. 258 in Scotland Neck. Betterment Sect. 1-6-6-140, Halifax and Edgecomb Counties, **$57,218.** Est. $50,000-$75,000 STBC, bit. surf. tr. or sand asph. or bit. conc. 9.44 mi. from 4.5 mi. southeast of Littleton at Gretna Green, southeast through Aurelian Springs to Darlington, Proj. 1,453, Halifax Co., **$80,677.** Est. $100,000-$125,000; sand asph surf. 13.7 mi. county roads in vicinity of Dublin and Clarkton, Betterment Sect. 3-7-27-17, Bladen and Columbus Counties, **$79,679.** Est. $75,000-$100,000; bit. conc. binder and surf. 16.54 mi. U. S. 74, 221-A and 64-A, in vicinity of Ellenboro, Forest City and Rutherfordton, Proj. 8833-8822, Rutherford Co., **$159,321.** Est. $175,000-$200,000 bit. surf. tr. or sand asph. or bit. conc. surf. 10.37 mi. from approx. 5 mi. southeast of Apex, southeast crossing, U. S. 15-A to N. C. 50, Betterment Sect. 4-7-38-42, Wake Co., **$89,488.** Est. $125,000-$150,000; traffic bound macad. bit. conc. binder and surf. 3.87 mi. U. S. 52 from Davidson-Forsyth county line north to South City limits of Winston-Salem, Proj. 7454, Forsyth Co., **$117,921.** Est. $125,000-$150,000 bit. conc. binder and surf. 9.12 mi. U. S. I, from end of curb and gutter in Apex to Chatham county line, Wake Co. **$91,355.** Est. $100,000-$125,000; traffic bound macad. or bit. conc. surf. 6.83 mi. from 5 mi. east of High Rock Lake, northeast to a point near City limits of Denton, Proj. 6-153, Davidson Co., **$138,368.** Est. $150,000-$175,000.

from Asheville Contrg. Co., Box 5119, Asheville, traffic bound macad. bit surf. tr. 3 mi. N. C. 603 from 1 mi. west of Sugar Grove, west to 7.7 mi. east of Tennessee State line, Proj. 7752, Watauga Co., **$164,532.** Est. $175,000-$200,000;***from Barrus Constr. Co., Box 561, Kingston, sand asph. surf. 6.1 mi. from point on U. S. 70 approx. 3.5 mi. south of Kingston to point on N. C. 55, 14 mi. west of Barnwell, Betterment Sect. 2-7-21-19, Lenoir Co., **$54,882.** Est. $50,000-$75,000; subgrade reinforced sand asph. surf. 8.51 mi. from Edgecombe-Pitt county line at Penny Hill, north to point 1 mi. south of Tarboro, Proj. 1-351, Edgecombe Co., **$78,764.** Est. $75,000-$100,000 sand asph. surf. 9.16 mi. from point on N. C. 55, 0.9 mi. northwest of Jasper, southeast to a point on U. S. 70, northwest of New Bern. Proj. 2-203, Craven Co., **$73,970.** Est. $75,000-$100,000.

from Blythe Bros. Co., 424 S. Brevard St., Charlotte, bit. conc. binder and surf. course, concrete patching, 17.1 mi. N. C. 16, 49, 27 and U. S. 29 and 74, in Charlotte and vicinity, Betterment Sect. 7-6-61-176, Mecklenburg Co., **$258,871.** Est. $250,000-$300,000***from D. W. Winkelman Co. Inc., Box 2566, Greensboro, sand bit. surf. 4.65 mi. N. C. 242 from N. C. 53 near U. S. 701, north toward Ammon, Proj. 3066, Bladen Co., **$54,874.** Est. $50,000-$75,000; traffic bound macad. or PCSBC, bit. surf. tr. or sand asph. surf. 5.96 mi. from point 0.2 mi. southeast of Swepsonville, south

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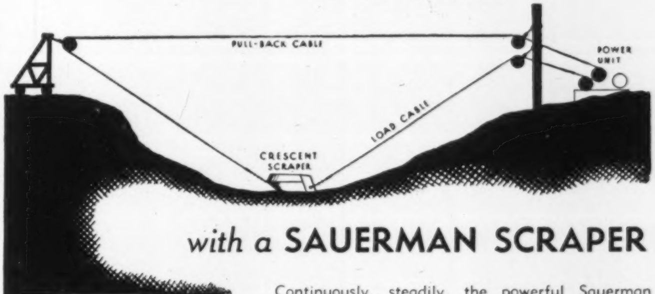

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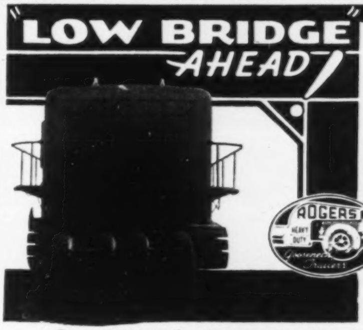

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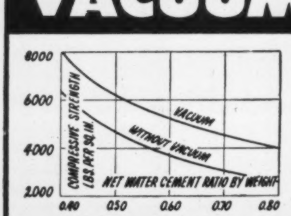

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to 0.1 mi. north of Saxapaw, Proj. 5-103, Alamance Co., **$116,722.** Est. $125,000-$150,000.

from Zeigler-Cline Constr. Co., Box 386, Fayettville, sand asph. base and surf. 12.26 mi. N. C. 904 from southeast of Fair Bluff, southeast to South Carolina state line via Cherry Grove, and from Cherry Grove to Tabor City, Proj. 3356, Columbus Co., **$167,248.** Est $175,000-$200,000; sand asph. surf. 8.62 mi. county roads in vicinity of Vander, Bonnie, Doone and Clifdale, Betterment Sect. 3-7-30-22, Cumberland Co., **$52,855.** Est. $50,000-$75,000***from Sam Finley, Inc., 1615 Cleveland Ave., S.W. Roanoke, Va., sand asph. base, surf. course 12.47 mi. from end of pavement on 6 St. in Aurora east to N. C. 304, Proj. 2-115, Beaufort and Pamlico Counties **$128,524.** Est. $125,000-$150,000; sand asph. base and surf. course 20.35 mi. from Bath Creek Bridge on N. C. 92 and County Rd. via Winsteadville to U. S. 264, at Belhaven, Proj. 2-102, Beaufort Co., **$131,684.** Est. $125,000-$150,000; bit. conc. surf. 6.9 mi. N. C. 16 and U. S. 221 in vicinity of Jefferson and West Jefferson, Betterment Sect. 8-6-68-164, Ashe Co., **$51,520.** Est. $50,000-$75,000.

from Brown Paving Co., Pineville Rd., Charlotte, traffic bound macad. bit. conc. binder and surf. course 1.2 mi. N. C. 87, on Webb Ave. from Anthony St. in Burlington southeast to junction with N. C. 49 and 54 at Graham, Betterment Sect. 5-6-42-153, Alamance Co., **$116,351.** Est. $100,000-$125,000; traffic bound macad., bit. conc. binder and surf. 7.48 mi. from point on U. S. 158, approx. 4 mi. east of Oxford, east to a point on U. S. 1 and 158, 2 mi. northeast of Henderson, Proj. 4722, Granville and Vance Counties, **$249,286.** Est. $300,000-$400,000. CD 8/19.

N. D., Casselton—City, Casselton, Aug. 8, asph. paving from W. H. Noel Co., Jamestown, **$62,054*****cement paving from Lindberg Constr. Co., Jamestown, **$71,697.** CD 7/29.

●**Pennsylvania**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, Aug. 31, grading, drainage, structures and paving 4.62 mi Sec. 27A, Philadelphia extens. of turnpike from point approx. 731 ft. west of L.R. 15144, easterly to point approx. 800 ft. east of Twp. Rd. 424, Chester Co., and grading, drainage, structures, paving 3.8 mi. Sec. 26C, Philadelphia extens. of turnpike, from point approx. 85 ft. east Twp. Rd 306 easterly to point approx. 731 ft. west of L.R. 15144, Berks and Chester Counties, from C. J. Langenfelder Co., 8427 Pulaski Hy., Baltimore, Md., **$3,707,788***** grading, drainage, structures, paving 6.43 mi. Sec. 26B, Philadelphia extens. of turnpike from point approx. 300 ft. west of Twp. Road 823 easterly to point approx. 85 ft. east to Twp. Rd. 306, Lancaster and Berks Counties, from Loyalhanna Constr. Co., 25 E Main St., Carnegie, Pittsburgh, **$2,797,356.** CD 8/12.

Tex., Canton — Van Zandt Co., Leon Cox, judge, Courthouse, Aug. 19, from Dew Constr. Co., Tyler, 9½ mi. clearing, grubbing, grading, removing old drainage structures and build new ones, approx. 16½ mi. oil base and asph. surf. tr. **$71,585.** Est. $190,000 ***7 mi. 2 lane all weather road, County Road 242, Precinct 3, **$56,660.** Est. $110,000 ***6 mi. road work, grading, surf. drainage, Road 216, **$53,360*****from Reynolds & Huff Constr. Co., Tyler, 4.1 mi. gravel base, asph. surf tr. County Road 428, $17,961. materials by owners, $36,000. **$53,961.** Est. $65,000. CD 8/2.

Tex., Dallas—City, City Hall Main and Harwood Sts., Aug. 23, from Texas Bitulithic Co., 111 Commerce St., asph. resurf. 89 blocks on 9 streets in various sects. of city, Contr. No. 1, **$73,962.** Est. $66,868***asph. resurf. 89 blocks on 9 streets, various sects. of city, Constr. No. 2, **$60,954.** Est. $66,868 ***asph. resurf. 89 blocks on 10 streets, various sects. of city, Contr. No. 3, **$58,173.** Est. $86,968***asph. resurf. Parry, Exposition and various other streets. Contr. 4, **$52,818.** CD 8/16.

Tex., Lubbock — City, Lubbock, Aug. 25, street grading, drainage, c. conc. paving on certain alleys from Panhandle Constr. Co., 620 Texas Ave., **$264,361.** W. N. Harris, city engr. CD 4/28.

British Columbia—Province of British Columbia, Parliament Bldgs., Victoria, Aug. 30, reconstruction 0.965 mi. Alexandra Lodge East section Trans-Canada Hy., Yale electoral dist., from Wood, Parr & McClay Ltd., 2696 East Hastings St., Vancouver, **$313,898.** CD 8/24.

CONTRACTS AWARDED

●**California**—State Div. Hys., Los Angeles, c. conc. on cement treated subgrade plant mix surf. on untreated rock base 1.8 mi., 3 rein.-con. box girder type bridges and exten. 2 rein.-con. pedestrian undercrossings on Ramona Parkway between Evergreen Ave. and 0.2 mi. each of Helen Dr., Los Angeles Co., to J. E. Haddock, Ltd., 3538 East Foothill Blvd., Pasadena, **$1,255,490.** Bids 8/24.

Georgia—State Hy. Dpt., Atlanta, paving, grading 8.681 mi. Wrightsville-Irwinton Rd., beginning at Johnson-Washington Co. line and exten. toward Irwinton to end of present pavement, F-062-1 (1), Washington and Wilkinson Counties, to W. L. Cobb Constr. Co., Decatur, **$114,505*****grading, paving 4.979 mi. Cochran-Dublin Rd. beginning at Bleckley-Laurens Co. line and ending at intersection of State Rt. 19 northwest of Dublin F-240 (2) Ct. 1, Laurens Co., to Ocmulgee Constr. Co., Mc Rae, **$85,924*****chert surf., 2 bridges 10.49 mi. and grading paving 0.472 mi. Spring Pl. on Calhoun-Spring Place Rd., beginning at Gordon-Murray Co. line and ending at State Rt. 2 in Spring Place, S-319 (3), Murray Co., to

Allgood Brothers Constr., Hapeville, **$228,320** ***paving 4.003 mi. Leesburg-Albany Rd. beginning approx. 15 mi. south of Lee-Dougherty Co. line and exten. north to intersection of present State Rt. 3, approx. 5 mi. south of Leesburg F-492 (1), CT 2, Lee and Dougherty Counties, to Hugh McMath Constr. Co., Columbus, **$166,664*****grading, paving 4.368 mi. College Park-Riverdale Rd., beginning at end of present pavement approx. 1.5 mi. south of College Park, and ending at State Rt. 85 in Riverdale, Proj. S-0856 (1), Clayton Co., to Hugh Steele Constr. Co., Centre, Ala., **$91,767** ***grading, paving 5.79 mi. Oglethorpe-Reynolds Rd., beginning at end of present pavement approx. 9.9 mi. north of Oglethorpe and ending at Macon-Taylor Co. line S-1151 (1), Macon Co., to Coffee Constr. Co., Eastman, **$57,183.** Bids 8/26. Grand total $774,362. Bids 8/26, awarded 8/30. CD 8/17.

Kentucky—State Hy. Dpt., Frankfort, grade, drain, traffic bound limestone 5.829 mi. Booneville-Buckhorn Rd., S 138 (2) SP (95-116) (13-247, Breathitt and Oswley Counties, to Kentucky Road Oiling Co., Frankfort, **$198,963.** CD 8/19, under LB.

●**Pennsylvania**—State Hy. Dpt., Harrisburg, grading, drainage structures, paving 4.355 mi. Sect. 21-B-1, Philadelphia Extens. of the Turnpike from point approx. 512 ft. west of L. R. 507, in Silver Spring Twp., easterly for 22,994.18 ft. to point approx. 3,200 ft. east of L.R. 123, Cumberland Co. to Johnson, Drake & Piper, 86 Trinity Pl., New York, N. Y., **$2,621,857*****grading, drainage structures, paving 2.56 mi. Sec. 21B-2 Philadelphia Extens. of Turnpike from point approx. 3,200 ft. east of L. R. 123 in Upper Allen Twp. easterly for 13,520 ft. to point approx. 170 ft. west of the Yellow Breeches Creek in Lower Allen Twp., Cumberland Co., and grading, drainage structures, paving 2.826 mi. Sect. 22A-1, Philadelphia Extens. of the Turnpike from point approx. 170 ft. west of Yellow Breeches Creek in Lower Allen Twp., Cumberland Co., easterly for 14,926 ft. to point approx. 155 ft. west of L. R. 250, Fairview Twp., York Co. to Central Penna. Quarry & Stripping Co., Hazleton, **$3,282,516.** Bids 8/10. Awarded 8/29. CD 8/15, under LB.

†**Alaska**—Bureau Pub. Roads, General Services Admin., Juneau, relocating 1.61 mi. Northern Tongass Hy. around Wacker City in vicinity of Ward Cove, with 480 ft. bridge over Ward Creek; reconstruct 2.7 mi. Southern Tongass Hy. from Rotary Beach to Mountain Point, to Reed & Martin, Fairbanks, **$778,822.** Bids 8/8. CD 8/15, under LB.

Alberta—Province of Alberta, Edmonton, reconstruction Hy. 16, to W. C. Wells Constr. Co. Ltd., Edmonton, **$318,844.** CD 12/3/43.

Alta., Edmonton—City, City Hall, asph. paving 30 blocks city streets, to Mannix-O'Sullivan Paving Co., Edmonton. Approx. **$76,681,** c conc. slab pavement, 30 blocks city streets to Crown Paving & Constr. Co., Edmonton, Approx., **$260,003.**

Que., Montreal—Municipality, paving, Cathedral, Projected, Normanville and Stuart Sts., Decarie Blvd. and Outremont Ave., to Frank Lapan Ltd., 7725 Souligny St., **$107,239.** H. A. Gibeau, city engr.

EARTHWORK, WATERWAYS

BIDS ASKED

On or About September 15

†**Arkansas and Mississippi**—U. S. Eng., P. O. Box 97, Memphis, 1, Tenn., placing approx. 15,000 squares of 5 inch, uncompacted asph. pavement on previously graded banks of Mississippi River, between Memphis, Tenn. (Mile 732 AHP) and mouth of White River (Mile 583 AHP), Invitation Serial No. CIVENG-40-041-50-27.

About September 23

†**Illinois**—U. S. Eng., 826 U. S. Court House and Custom House, St. Louis, 1, Mo., levees, Columbia Drainage and Levee Dist., (Proj. Item III A.) Monroe Co.

September 23

†**Louisiana**—U. S. Eng., foot Prytania St., New Orleans, electrification Plaquemine Lock, Serial No. Eng. 50-53. Iberville Parish.

September 27

†**California**—U. S. Eng., Wright Bldg., Sacramento, maintenance dredging on Sacramento River near Sacramento from M St. Bridge to V St. bond and from American River to "I" St. Bridge, Spec. No. 17.

†**Mississippi**—U. S. Eng., P. O. Box 60, Vicksburg, Steele Bayou Channel imprv., Item St. 32, Mile 30.45 to Mile 33.50, Serial No. CIVENG 22-052-50-36.

LOW BIDDERS

†**Arkansas**—U. S. Eng., 300 Broadway, Little Rock, Aug. 23, emergency levee repairs in Crawford Co., Serial No. CIVENG-03-050-50-13, Lot 1, from Clark & Farrell, Hot Springs, **$67,800,** est. $60,240; Lot 2, from McMullen-Larsen Co., Dallas, Tex., **$50,625,** est. $51,177. CD 8/10.

†**Illinois**—U. S. Eng., 826, U. S. Court House and Custom House, 1114 Market St., St. Louis, Zone 1, Mo., rejected bids Aug. 18, clearing and snagging Macoupin Creek, Greene and Jersey Counties, Serial No. CIVENG 23-065-50-3. CD 7/22.

†**Iowa**—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, Zone 1, cancelled bids to have been opened June 1, upper approach channel dredging Mississippi River, Levee Dist 10, Guttenberg, Serial No. CIVENG 21-018-50-5, CD 8/23.

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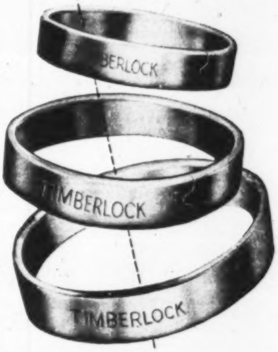

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†Louisiana—U. S. Eng., P. O. Box 60, Vicksburg, Miss., Aug. 25, approx. 830,000 cu. yd. uncompacted levee and 720 cu. yd roadway on Mississippi River, Serial No. Eng. 50-46, from H. B. Blanks Constr. Co., Vidalia. **$167,167.** CD 8/19.

†Louisiana—U. S. Eng., foot Prytania St., New Orleans, Zone 2, Aug. 23, approx. 1,900 lin. ft. standard board revetments, Serial No. Eng. 16-047-50-33, Caddo Parish, from Pine Bluff Sand & Gravel Co., P. O. Box 995, Pine Bluff, Ark., **$118,195.** CD 8/9.

La., Marksville—Avoyelles Parish Police Jry, Marksville, Aug. 10, excavation 205,200 cu. yd. P. N. 180; 510,000 cu. yd. P. W. 181, 151,000 cu. yd. P. W. 182, from Delta Equip. Co. Baton Rouge, **$152,638;** excavation 290,600 cu. yd. P. W. 183, from Townsend Bros., Bunkie, **$26,880.** CD 7/27.

†Nebraska — U. S. Eng., 1709 Jackson St., Omaha, Aug. 11, dikes and revetment adjacent to Missouri River at Frazier-Lower Brownville Bends, near Brownville, Serial No. CIVENG-25-066-50-4, from Cunningham-Kiewit Co., 4229 Lafayette Ave., Omaha, **$547,573.** CD 8/3.

†New Jersey—U. S. Eng., 120 Wall St., New York, 5, N. Y., Aug. 30, maintenance dredging Passaic River, Center St. Bridge, to Nairn Linoleum Works, Serial No. CIVENG-30-075-50-13, from Arundel Corp., foot of Fulton St., Brooklyn, N. Y., **$411,272.** Est. $332,445. CD 8/19.

†New York—U. S. Eng., 120 Wall St., New York, Zone 5, Sept. 1, maintenance dredging, Hudson River, between Albany and Stockport Serial No CIVENG-30-075-50-15 from Atlantic Gulf & Pacific Co., 15 Park Row, New York, **$233,091.** CD 8/25.

†Oklahoma—U. S. Eng., Box 61, Tulsa, Aug. 25, clearing reservoir, Hulah Dam, Caney River, Inv. No. CIVENG-34-066-50-11 from James Bros. Constr. Co., Okmulgee, **$246,550.**

†Tennessee—U. S. Eng., P. O. Box 1070, Nashville, Zone 1, Aug. 18, drilling and grouting, Center Hill Reservoir, Caney Fork River, CIVENG-40-058-50-5, from Cunningham Core Drilling & Grouting Corp., P. O. Box 513, Salem, Va., **$253,380.** Est. $311,960. CD 8/10.

†Utah—Bureau Reclamation, Dpt. Interior, Provo, Aug. 23, construct Murdock diversion dam and Provo reservoir canal. Station 2 plus 86.37 to 5 plus 55, Spec. 2741, Provo River Proj., Deer Creek Div. from Thatcher & Mayberry Constr. Co., Ogden, **$147,265.** CD 7/25.

CONTRACTS AWARDED

†Louisiana—U. S. Eng., foot Prytania St., New Orleans, dredging approx. 5,500,000 cu. yd. material from Calcasieu River and Pass, Calcasieu and Cameron Parishes, Serial No. Eng. 50-1, to Great Lakes Dredge & Dock Co., International Trade Mart Bldg., 124 Camp St., New Orleans, **$615,150.** Bids 8/11. Awarded 8/26. CD 8/18, under LB.

●†Nebraska—Bureau Reclamation, Dpt. Interior, Superior, earthwork, concrete canal lining and structure, station 1 plus 87.3 to station 772 plus 00, Courtland Canal, Bostwick Div., south of the Republican River in vicinity of Guide Rock and Superior, Missouri River Basin Proj. Bostwick Div. Spec. 2707 to Terteling & Sons, Inc., 4011 Fairview Ave., Boise, Idaho. **$1,265,951.** Bids 7/14. Awarded 8/10. CD 7/29. under LB.

Pa., Phila.—Phila. Electric Co., 900 Sansom St., bulkhead, Delaware Ave. and Lewis St., to Thomas Earle & Son, Inc., Land Title Bldg., **$400,000.**

Tex., Beaumont—Jefferson County Drainage Dist. 6, Beaumont, drainage, straightening Hillebrandt and concrete lining, etc. to Farnsworth & Chambers, Inc., Box 74, Houston, **$525,770.** Bids 8/5. CD 8/15, under LB.

Tex., LaGrange—Mullins Prairie Drainage Dist., LaGrange, drainage and flood overflow protection, Mullins Prairie area. Own forces. Approx. **$75,000.**

AIRPORTS AND AIRBASES

LOW BIDDERS

†N. M., Alamogordo—ROCKET TEST FACILITIES—U. S. Eng., P. O. Box 1538, Albuquerque, Aug. 25, addnl. rocket flight test facilities, 3,500 lin. ft. double track on concrete pads, cable trenches; 17,300 lin. ft. 10 in. and smaller waterlines, etc., water storage, sewer lines, etc. Holloman Airforce Base, A-92, Serial Eng-29-005-50-5 from Ponsford Bros., P. O. Box 1412, El Paso, Tex., **$451,138.** Est. $350,000. CD 8/2.

†N. C., Cherry Point (Br. New Bern)—RECREATION BLDG.—Officer in Charge of Construction, Bureau Yards and Docks, U. S. Marine Corps Air Station, Cherry Point, Aug. 22, Memorial Recreation bldg., NOY 17402, Spec. 21262, from Skinner & Ruddock, Inc., 12 State St., Charleston, S. C., **$117,671.** CD 8/5.

Ore., Portland — AIRPORT — City, Spalding Bldg., Aug. 24, reconstruct north part of center taxiway and north taxiway at Portland Airport, from Warren Northwest, Inc., 9860 N.E. Hancock St., **$172,776.** Est. $300,000. John W. Cunningham, Spalding Bldg., engr.

Rhode Island—AIRPORT—State of Rhode Island, P. Mancini, Comr. Pub. Wks., State Office Bldg., Providence, Aug. 24, 2,000 ft. long, 150 ft. wide single strip runway, access road, etc., airport, New Shoreham Sect., at Block Island, from N. B. King, Inc., 26 Moore St., New London, Conn., **$227,638.** Est. $200,000. CD 8/15.

●†Alaska—ROADS, etc.—U. S. Eng., Anchorage, Sept. 1, roads, streets and drainage facilities, Fort Richardson DEF-16, and sewage treatment plant and water treatment plant, Ladd Air Force Base, DEF-17, Fairbanks, from

Morrison-Knudsen and Peter Wiewit Sons Co., Hoge Bldg., Seattle 4, Wash., **$675,680**, est. $992,521 and **$863,247**, est., $930,467 respectively. CD 8/11.

CONTRACTS AWARDED

†Miss., Biloxi—HOUSING—U. S. Eng., 2301 Grant St., Mobile, Ala., family quarters, to The Green Lumber Co., Laurel, **$639,800.** Bids 7/15. CD 7/25, under LB.

Okla., Tulsa — CONTROL TOWER — City, Tulsa, airport control tower, to G. & W. Constr. Co., 2507 Garrison St., Zone 6, **$123,528.** Est. $100,000. Leon B. Senter, Philtower Bldg., archt. Awarded 8/23. CD 1/12/45.

†Okla., Oklahoma City—SPRINKLER SYSTEM—U. S. Eng., P. O. Box 61, Tulsa, Zone 2, Aug. 17, installing automatic sprinkler sys., Tinker Air Force Base, Eng. 34-066-50-1, from Grinnell Co., Inc., 1315 Marilla St., Dallas, Tex., **$357,795.** Est. $362,405. CD 7/22.

†Alaska — FACILITIES, etc. — U. S. Eng., Anchorage, fire protection facilities and drilling, casing 3 wells, Eielson Air Force Base, DEF-18, Fairbanks, to Benson-Montin, Inc., Peter Bldg., Oklahoma City, Okla., **$178,000.** Est. $149,508. Bids 9/1. CD 8/11.

Que., Mont Joli—TAXI STRIPS—Government of Canada, Dpt. Transport, Hunter Bldg., Ottawa, Ont., hard surf. and taxi strips at airport, to Armstrong Bros. Constr. Inc., 75 Main St., Brampton, Ont., **$400,000.**

LATIN AMERICA

Argentina, Buenos Aires—Direccion General Fabricas Militares, Buenos Aires, receiving bids September 30, power plant 3 units each 5,000 kilowatts for Republic of Argentina, Buenos Aires.

Ecuador, Quito—Republic of Ecuador, Quito, construct 110 kilometers Quito, Quininde, Esmeraldas Hy., to Compañia de Construcciones, Astra, Quito. Approx. **$2,000,000.** Ministry of Pub. Wks., Quito, engrs. CD 2/26/46.

PUBLIC BUILDINGS

BIDS ASKED

September 20

Ont., New Toronto—SCHOOL—J. B. Parkin & Assoc., archts., 648 Church St., Toronto, 2 story, bsmnt., V-shaped, rein.-con. brick vocational and high school, Approx. **$350,000.** Plans deposit $25. CD 11/24.

September 27

Calif., Oakland — SCHOOL — Oakland Bd. Educ., 1025 2 Ave., 2½ story, 50,000 sq. ft., rein.-con. Belle Vista Elementary School, $600,000. Plans deposit $25. Malcolm D. Reynolds & Loy Chamberlain, 3833 Piedmont Ave., archts. CD 1/16/46.

N. Y., Albany — RESIDENCE HALL, etc. — New York State Dormitory Auth., 93 State St., residence hall and attendant facilities at New York State College for Teachers. Plans deposit $40. H. O. Fullerton, 152 Washington Ave., archt. CD 12/26/46.

September 28

N. C., Raleigh—POWER PLANT—at office Frank B. Turner, bus. mgr., Revenue Bldg., power plant for State Hospital, Raleigh. $885,000. Wiley & Wilson, Lynchburg, Va., consult. engrs.

September 29

†D. C., Wash. — WARD ALTERATIONS — U. S. Eng., First & Douglas Sts. N. W., Zone 25, neuropsychiatric ward alterations Army Medical Center, Walter Reed General Hospital, Serial No. ENG-40-080-50-5-(5). CD 3/29 under LB.

†Washington — REGISTERS, etc. — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo. furnishing and del. f.o.b. cars at shipping point or f.o.b. cars at Odair, Wash., registers and grilles for ventilating system for Grand Coulee Pumping Plant, Columbia Basin Proj., Spec. 2779. L. N. McClellan, ch. engr.

September 30

†Calif., Skaggs Island—TERMINAL EQUIPMENT—Pub. Wks. Officer, Mare Island, Naval Shipyard, Vallejo, 2 story rein.-con. terminal equip. bldg., NOY 17944, Spec. 21782. Plans deposit $20.

LOW BIDDERS

Conn., Danbury—HOUSES—City, Danbury Housing Auth., Danbury, Aug. 29, 26 duplex and 10 single frame houses, Liberty Ave., from Frouge Constr. Co., Inc., 74 Goodsell St., Bridgeport, **$643,000.** Est. $780,000. CD 8/17.

Ill., Springfield — POWER PLANT AND TUNNELS—State of Illinois, Springfield, power plant and tunnels, State Capitol Group, underground electric distr. sys., from Blades-Campbell Inc., 610 W. Water St., Decatur, **$198,861**; electric service conversion, from Anderson Electric Co., 5 McDonald St., Danville, **$142,200**; pipe covering work, from Hanley & Co., 1503 S. Michigan Ave., Chicago **$378,960.**

Ind., Bloomington—SCHOOL—Indiana University, Bd. Trustees, Bloomington, Aug. 23, school of education, from Johnson, Drake & Piper, P. O. Box 22, Terre Haute, **$539,000.** Est. $615,000. CD 8/1.

Ind., Evansville—SCHOOL—Bd. School Trustees, Evansville, Aug. 25, Harper elementary school from Bauer Bros. Constr. Co., Evansville, **$496,203.** Est. $900,000. CD 8/4.

●N. C., Chapel Hill—HOSPITAL—University of North Carolina, Chapel Hill, Sept. 2, general contract hospital alterations and addn. to medical school, from **J. A. Jones Constr. Co.,** 209 W. 4 St., Charlotte, **$2,626,000**; plumbing, from Crutchfield Plumbing Co., Greensboro, **$308,985.** CD 7/20.

O., Cincinnati—HOSPITAL—Bd. Pub. Welfare, State Office Bldg., Columbus, July 29, 3 story bsmnt, brick, steel 154x42x54 ft., 100 bed addn. to Longview State Hospital from **Leo J.** Brielmaier, 3401 Harrison Ave., **$442,190.** Est. $839,000. Bodenstein & Schuster, 2nd Natl. Bank Bldg., engrs. CD 7/6.

O., Oxford—EDUCATIONAL BLDG.—State of Ohio, State Office Bldg., Front St., Columbus, Aug. 18, 2 story 42x82 ft. brick, steel industrial educational bldg. and power plant addn. from Benzing & Son, 709 9 St., Hamilton, **$472,735.** CD 8/10.

Pa., Williamsport—SCHOOL—Williamsport School Dist. 2229 W. 3 St., May 23, Junior High School, from Lundy Constr. Co., 1896 W. 4 St., **$707,187.** CD 5/19.

Tex., Austin — POWER PLANT — City, c/o Guiton Morgan, mgr., City Hall, Aug. 31, main power plant structure, Contr. 12-B from J. M. Odom, 914 Congress Ave., **$189,830.** CD 8/1.

CONTRACTS AWARDED

Ark., West Memphis—HOSPITAL—Crittenden Co., West Memphis, general contract county hospital, to Harmon Constr. Co., Wallace Bldg., Little Rock, **$673,400.** Bids 8/1, awarded 9/2. CD 8/8, under LB.

●†Ia., Iowa City—HOSPITAL—U. S. Eng., Clock Tower Bldg., Rock Island, Ill., veterans administration hospital to Gus Newburg, 9 S. Clinton St., Chicago, Ill., **$6,656,000**; elevators, to Westinghouse Electric Corp., 506 N. Dearborn St., Chicago, Ill., **$292,880.** Bids 8/18, awarded 9/2. CD 8/24, under LB.

●N. Y., Oswego — DORMITORY — New York State Dormitory Auth., State Educ. Bldg., Albany, general contract dormitory and residence hall to William E. Bouley & Co., 148 Genesee St., Auburn, **$1,075,000.** Bids 7/14. CD 8/11, under LB.

N. Y., Postdam—RESIDENCE HALL, etc.—New York State Dormitory Auth., Albany, general contract residence hall and facilities bldg. to Wright & Morrissey, 29 Clinton St., Plattsburg, **$715,051.** Bids 8/4. CD 8/11, under LB.

●Okla., Norman—STUDENT UNION BLDG.—University of Oklahoma, Norman, student union bldg. addn. to Manhattan Constr. Co., First Natl. Bldg., Oklahoma City, Zone 2, **$1,581,667.** Est. $1,720,000. Bids 8/30. Awarded 8/30. CD 8/16.

Tex., Odessa—HIGH SCHOOL—Ector County Independent School Dist., Odessa, general constr., Junior High School and one boiler house to J. W. Bateson Constr. Co., Irwin-Keasler Bldg., Dallas, **$770,041.** Bids 8/20. CD 8/26, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

September 8

Ill., Washington Park (East St. Louis, P. O.)—CHURCH—St. Martin of Tours Catholic Parish, Rev. Francis A. Beykirch, J. C. L., pastor, 5314 North Park Dr., soon lets contract 1 story, bsmnt., 48x124 ft. brick, concrete, stone church. Paul J. Saunders, Chemical Bldg., 721 Oliver St., St. Louis, 1, Mo., and Eugene S. Johnson, Murphy Bldg., E. St. Louis, archts.

September 20

Ga., Decatur—DINING HALL—Agnes Scott College, College Ave., Letitia Pate Evans Dining Hall, Approx. $250,000. Logan & Williams, Palmer Bldg., Atlanta, archts.

September 23

N. C., High Point — BUILDING — Young Men's Christian Assoc. of High Point, Inc., Sheraton Hotel, Y. M. C. A. bldg. Plans deposit $50 general, $25 mechanical. Voorhees & Everhart, High Point, archts. CD 8/23.

Tex., Fort Worth — CHURCH — Riverside Baptist Church, 3919 Race St., church. $250,000. Easterwood & Easterwood, Bewley Bldg., archts. CD 3/23.

Ont., Hamilton—Y. M. C. A. BLDG.—W. A. Souter & Assoc., archts., 36 James St., S., 3 story, bsmnt. 66x100 ft. rein.-con. steel, brick Y. M. C. A. bldg. addn., for Y. M. C. A. 79 James St. S., Approx. $300,000. CD 2/18.

September 29

N. J., Princeton—HOSPITAL ADDN., etc.—Princeton Hospital, Princeton, hospital addn. and nurses home, $300,000. York & Sawyer, 101 Park Ave., New York, N. Y., archts., and Wilcox & Erickson, 11 E. 44 St., New York, N. Y., engrs. CD 2/2.

Bids Asked

Ill., Chicago—APARTMENT BLDG.—Wanen Court Apartments Inc., corner Rockwell & Rascher, Zone 25, 5 story, 125x170 ft. steel, concrete, brick apartment bldg., $500,000. Shaw, Metz & Dolio, 208 S. LaSalle St., Zone 4, archts.

Ill., Crete — CHURCH—Trinity Lutheran Church, Cass and Elizabeth Sts., 60x120 ft. wood, stone, limestone church, $250,000. Herbert A. Brand, 400 W. Madison St., Zone 6, Chicago, archt.

Tex., Houston—OFFICE, WAREHOUSE—Missouri Pacific R. R. Co., R. P. Hart, ch. engr., Missouri Pacific Bldg., St. Louis 3, Mo., office and warehouse, in Settegast Yards, **$250,000**; 24x624 ft. covered transfer platform bldg. **$100,000.**

SOON LETS CONTRACT

Ala., Jasper—THEATER—The Walker Theatres, c/o Erle G. Stillwell, archt., Hendersonville, N. C., soon lets contract theater.

●Tex., Houston — STORE — Sears Roebuck & Co., 4207 Main St., soon lets contract store, 43 and Garden Oaks Blvd. at Shepherd Dr. $1,000,000. George L. Dahl, 508 Young St., Dallas, archt. Cowell & Newhause, 2303 LaBranch St., consult. engrs. CD 4/8.

B. C., Vancouver — OFFICE — McCarter & Nairne, archts., 355 Burrard St., soon lets contract 5 story bsmnt., 52x120 ft. rein.-con. office, for Yorkshire & Pacific Securities Ltd., 525 Seymour St., 5 story bsmnt., 52x120 ft. rein-con. office, Approx. $400,000. Plans deposit $50.

LOW BIDDERS

O., Urbana — HOSPITAL — Mercy Memorial Hospital, c/o Sisters of Mercy, 2222 Victory Parkway, Cincinnati, Aug. 24, 3 story 50 bed capacity, rein.-con., brick, steel hospital, from Knowlton Constr. Co., 106 N. Main St., Bellefontine, **$578,600.** CD 8/22.

●Tex., Corpus Christi — APARTMENTS — Orville W. Eastland, Jones Bldg., rejected bids June 25, 35 apartments, **$1,500,000.** Will readvertise. CD 6/21.

CONTRACTS AWARDED

Calif., Freedom—RESIDENCES—Bay District Builders, Inc., 1095 Market St., San Francisco, 59 residences in Murphy Subdivision. Owner builds, **$600,000.**

Calif., Norwalk — DWELLINGS — Sydmar Homes, Inc., 6305 Orange Ave., Long Beach, 92 frame, stucco dwellings, Tina, Beaty and Allard Sts. Owner builds. **$605,500.** Paul Duncan, 4823 Laurel Canyon Bldg., Los Angeles, archt.

●Conn., Manchester — HOUSES—Alexander Jarvix, 6 Dover St., 150 frame single-family homes, Middle Turnpike West, Owner builds, **$1,250,000.**

Conn., Willimantic—HOUSING—Hale Crest Corp., 68 Pratt St., Hartford, 100 frame 4 room 27x27 ft. homes, High St., Owner builds, **$700,000.** CD 8/25.

Ill., Chicago — APARTMENTS—5858 Sheridan Building Corp., c/o T. J. Linane, 1 North LaSalle St., attorney, 12 story, steel, concrete, brick apartment, to Ideal Contrg. Co., 5438 N. Broadway Zone 40, **$950,000.** CD 8/12.

Ky., Fort Wright—HOUSING—George Kreutzuans, 9 Augusta Ave., Ft. Wright, thirty-five 1½ story, 30x38 ft. concrete, brick, stone houses, separate contracts, **$420,000.**

Mo., St. Louis—LABORATORY—Washington University, Arthur H. Compton, chancellor, Skinker and Lindell Blvds., St. Louis, Zone 5, 6 story, bsmnt. stone, brick laboratory east side Euclid Ave., at Kingshighway connecting north and south bldgs. Washington University School of Medicine, to Gamble Constr. Co., 804 Pine St., St. Louis, Zone 1. Approx. **$900,000.** Harris Armstrong, 5 Sappington Spur, Kirkwood, St. Louis, Zone 22, archt. CD 5/2.

N. J., Summit—APARTMENT PROJECT—Louis Kaplowitz & Assoc., c/o McMurray & Chirgotis, archts., 968 Stuyvesant Ave., Union, N. J., 59 family garden apartment project on Locust Dr., to Don Constr. Co., c/o owner. Approx. **$500,000.**

N. C., Asheville — APARTMENT—Beverly Apartments, Inc., c/o Palmer E. Pickard, Asheville, apartment development. Owner builds. Approx. **$500,000.**

O., Cincinnati—RESIDENCES—George Hare & Sons, 5730 Montgomery Blvd., 18, 1½ story brick, frame, stone residences, Colonial and Ranch types, Columbia Twp., separate contracts, **$450,000.** Wilbur Firth, 3778 Isabella Ave., archt.

●O., Grosbeck—RESIDENCES—Royal Jackson, Inc., Galbraith Rd., 123, 1½ story bsmnt, brick and concrete residences. Own forces. **$1,230,000.**

O., Hamilton — RESIDENCES — Andrew G. Gosmeyer, Laurel and Andrew Aves., fifty-one 1½ story brick, frame, residences, separate contracts, **$408,000.** CD 10/4/48.

Pa., Sewickley—APARTMENTS—Boulevard Apartments, Inc., Sewickley, 7 two story bsmnt, 36x82 ft. brick apartments. Owner builds. **$850,000.** Phillip Friedman, 121 S. Negley St., Pittsburgh, archt.

Pa., Wilkinsburg — APARTMENTS—C. R. Mathewson & C. W. Isner, Verona Rd., Rosedale, Pittsburgh, 16 three story bsmnt., brick apartments, Wm. Penn Hy. Owner builds. **$400,000.** CD 8/8.

S. C., Cayce—APARTMENTS—T. L. Bonner, Cayce, 112 apartment units. Owner builds. **$725,000.**

Tenn., Nashville — CLASSROOM BLDG.—Scarritt College for Christian Workers, 1008 19 Ave. S., classroom bldg. to Rock City Constr. Co., 135 4 Ave. N., **$403,593.**

Tex., Baytown — DWELLINGS — Baytown Constr. Co., c/o B. F. Sturman, Sterling Bldg., Houston, 70 dwellings. Own forces. Approx. **$400,000.** CD 8/25.

Tex., Dallas — APARTMENTS, SHOPPING CENTER—American Home Realty Co., Angus Wynne Jr., 2311 Salerno St., eight 2 story apartments, **$375,000**; 2nd unit shopping center, Illinois and Zang Sts., **$400,000.** Own forces. DeWitt & Swank, 2025 Cedar Springs Rd., consult. archts.

Tex., Dallas—RESIDENCES—Lewis & Lamberth, 3728 Mt. Rainier St., 100 residences, Community Housing Proj. Owner builds. Approx. **$400,000.** CD 3/3/48.

Tex., Galveston—DWELLINGS—W. R. Reid & T. A. Robinson, 4002 Timon Blvd., Corpus Christi, 100 dwellings, north end of North Flats area. Owner builds. Approx. **$600,000.** CD 8/19.

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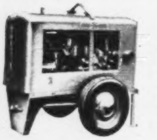

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Tex., Houston — DWELLINGS — Magnolia Realty Co., Herbert L. Crate, pres., 2nd Natl. Bank Bldg., 125 dwellings for Negroes on Jeanetta Rd. Own forces. Approx. **$600,000.** CD 8/19.

Tex., Pasadena — APARTMENTS — Carl C. Sharp and Bayou Park Apartments, Inc., 6004 Mercer St., Houston, 70 apartments. Owner builds. **$475,000.** CD 8/16.

●**Wash., Seattle**—MEDICAL-DENTAL BIDG. —Metropolitan Building Co., Cobb Bldg., Zone 1, 14 story Medical-Dental Bldg., to G. E. Teufel, White-Henry-Stuart Bldg., Seattle, Zone 1, **$1,300,000.** W. H. Fey, Cobb Bldg., archt., and S. Ivarsson, Skinner Bldg., Zone 1, engr. CD 6/25/47.

Wash., Wapato — HOUSES — Modern Home Builders, Inc., 3849 34 Ave. West, Seattle, 60 houses, day labor, **$400,000.**

Alta., Edmonton—HOTEL—Alberta Investments Ltd., c/o contractor, 4 story, bsmnt. hotel, southwest corner Jasper Ave. and 108 St., to A. V. Carlson, Edmonton, **$800,000.** Fred H. MacDonald, Edmonton, archt.

Alta., Edmonton—STORE—T. Eaton Co. Ltd., Yonge St., Toronto, Ont., 172x320 ft. steel, concrete store addn., to Christiansen & MacDonald, 612 Tegler Bldg., Edmonton, Approx. **$500,000.** Northwood & Chivers, 406 Nonton Bldg., Winnipeg, Man. archts.

●**Que., Cap de la Madeleine**—HOSPITAL—Reverend Sister of the Grey Nuns of the Cross, 7 Water St., Ottawa, Ont., 5 story, bsmnt., 45x180 ft. and 44x60 ft. brick, rein.-con. hospital, to Beamier & Morin, Cap de la Madeleine. **$1,000,000.** A. Lacoursiere, 101 Fourth Ave., Shawinigan Falls, archt.

INDUSTRIAL BUILDINGS

BIDS ASKED

September 22

Tex., Houston—PARKING GARAGE—Sakowitz Bros., 720 Main St., 5 deck, steel, rein.-con. parking garage, underground tunnel connecting garage with store, Main St. at Dallas St. $500,000. A. C. Finn, archt., and Robert J. Cummins, engrs., and Reg. F. Taylor, mech. engr., all Bankers Mtg. Bldg.

September 30

Calif., San Francisco — PLANT — General Petroleum Corp., 417 Montgomery St., San Francisco, reconstructing Islais Creek plana, Approx. $70,000.

Bids Asked

Conn., Derby—BUS GARAGE—Connecticut Railway and Lighting Co., 55 Congress St., Bridgeport, 1 story, brick, steel, cinder blocks, house and maintain derby division bus garage, Main St., over $68,000. Fletcher, Thompson, Inc., 211 State St., Bridgeport, archt. Former bids rejected. CD 8/3.

R. I., Pawtucket — WAREHOUSE—Harry Gersham, Dexter St., Central Falls, 2 story, bsmnt., steel, cinder block warehouse, Pleasant and Taft Sts. **$68,000.** S. Bizier, 11 High St., archt.

R. I., Pawtucket—WAREHOUSE—M. L. Harriett, East Ave., 3 story bsmnt., 64x85 ft. cinder block warehouse, Taft and Pleasant Sts. $70,000. S. Bizier, 11 High St., archt.

Tex., Ennis — WAREHOUSE — Leggett & Platt, Ennis, 80x200 ft. frame and metal warehouse, rein.-con. slab on fill. $75,000. Walter W. Ahlschlager, 212 S. St. Paul St., Dallas, archt.

Ont., Dresden—FACTORY—J. W. S. Stovey, archt., 169 Queen St., Chatham, 71x181 ft. concrete, steel, brick, stone factory, for National Hardware Specialties Ltd., 135 Duncan St., Wallaceburg, $100,000. CD 8/4.

Ont., Ottawa—PLANT—LeFort & Gillelland, archts., 18 Rideau St., 1 story, bsmnt., 40x80 ft. concrete, brick photo finishing plant, $70,000, for Photographic Stores Ltd., 65 Spark St.

Que., Montreal—FACTORY—DeBelle & White, archts., 4921 Glencairn Rd., 80x100 ft. concrete, steel factory, for Durable Upholsterers Ltd., 2158 Montgomery St. $75,000.

SOON LETS CONTRACT

Miss., Biloxi — TERMINAL — Teche Greyhound Lines, c/o Diboll-Kessels & Assoc., archts., Baronne Bldg., New Orleans, La., soon lets contract bus terminal. CD 8/16.

N. J., Camden—MANUFACTURING, etc.—Clorox Chemical Co., 51 Pacific Ave., Jersey City, soon lets contract mfg. and warehouse bldg. $250,000. Stewart C. Barnett, 527 Cooper St., engr.

Pa., Pittsburgh—STOCKHOUSE—Pittsburgh Brewing Co., 3340 Liberty Ave., soon lets contract 1 story, bsmnt. brick, steel frame stockhouse, $75,000. Robert J. Brocker, 201 Coulter Bldg., Greensburg, archt.

LOW BIDDERS

Ia., Des Moines—PLANT—Iowa Power & Light Co., 312 6 St., general contract, plant bldg., from Weitz Co., Inc., 406 Fleming Bldg., **$551,800.** Brooks-Borg, 820 Hubbell Bldg., archts. CD 9/27/45.

Pa., Erie—SERVICE BLDG.—St. Vincent's Hospital, 2420 Sassafras St., rejected bids July 29, 60x160 ft. steel frame, brick and limestone service bldg. Est. **$300,000.** CD 8/2.

Pa., Upper Darby — GARAGE, etc. — Main Line Transfer Co., 69 St. Terminal Bldg., garage, office and 2 small bldgs., from Nason & Cullen, 6522 Vine St., Phila., **$334,800.** CD 8/18.

●**Tex., Alba**—REFINERY—Alba Oil & Refining Co., Alba, cancelled bids, refinery. Est. **$1,000,000.** CD 7/21.

CONTRACTS AWARDED

Calif., San Francisco—WAREHOUSE, etc.—Leo J. Meyberg, 70 10 Ave., Class C concrete wood frame, warehouse and office, to Cahill Bros., 206 Sansome St., **$534,368.** CD 6/28, under LB.

Alta., Edmonton—FREIGHT SHEDS—Canadian National Railways, B. Wheelwright, ch. engr., Edmonton, 1 story, bsmnt., 50x900 ft. concrete, steel, brick, freight sheds, to W. C. Wells Constr. Co., 9900 104 Ave., Edmonton. Approx. **$750,000.** Bids 7/27. CD 7/13.

Alta., Edmonton — WAREHOUSE — Gault Ltd., Revillon Bldg., 2 story, bsmnt., 135x150 ft. concrete, steel, brick warehouse, 104 Ave., to C. H. Whitman Ltd., 7 Shasta Bldg., Edmonton. Approx. **$500,000.** Stanley & Stanley, 10029 Jasper Ave., archts. CD 7/15.

●**Que., Cartierville (Postal Dist. Montreal)**—PLANT—Canadair Ltd., St. Laurent Blvd., 300x800 ft. rein.-con. foundations, and floor for aircraft plant, to Angus Robertson Ltd., 5035 Western Ave., Montreal, Approx. **$1,000,000.** E. C. Miller, 485 McGill St., Montreal, archts. CD 9/2.

UNCLASSIFIED

BIDS ASKED

September 20

Minnesota—RURAL DISTRIBUTION LINES—East Central Electric Assn., Braham, labor, materials, equip., except conductor and transformers, 266 mi. rural distr. lines, Benton, Morrison, Mille Lacs, Kanabec, Isanti, Pine and Chisago Counties, (Minnesota IT Kanabec), $225,000. Plans deposit $25, United Engrg. Service, 600 Kasota Bldg., Minneapolis, engrs., CD 8/25.

September 22

Ontario — RAILWAY RELOCATION—chn., Hydro Electric Comn. of Ontario, 620 University Ave., Toronto, railway sub-grade, auxiliary structures for 38 mi. railway relocation, Plans deposit $25.

September 27

N. J., Lawrenceville — FIELD HOUSE — Lawrenceville School, Lawrenceville, field house. $400,000. Karcher & Smith, 1520 Locust St., Phila., Pa., archts. CD 2/3/47 under Commercial Bldgs.

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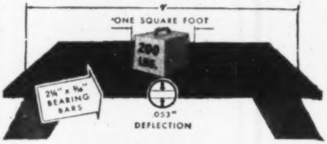

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Tex., Laredo—GOLF COURSE—City, Hugh S Cluck, mayor, Laredo, 18 hole golf course. $75,000.

September 28

California—TRAFFIC SIGNAL SYSTEM—State Div. Hys., P. Wks. Bldg., Sacramento, traffic signal system with hy. lighting between 21 St. and "H" St. G. T. McCoy, state hy. engr.

Bids Asked

O., Cincinnati — CANIVORA BLDG., etc. — Bd. Park Commrs., City of Cincinnati, 2005 Gilbert Ave., 1 story steel brick, concrete canivora bldg. and rotunda, cages, workshops, lockers, etc., concrete, stone, brick, steel ape house and amphitheatre. $668,547. Kruckmeyer & Strong, 1824 Carew Tower, archts., Hixon, Tarter & Assoc., Peoples Bank Bldg., 4 and Elm Sts., engrs.

O., Cincinnati — RAILROAD SIDING, etc. — Jackson Box Co., 4927 Beech St., Norwood, R. R. siding, truck and rail loading dock, 1 story approx. 25,000 sq. ft., concrete block or brick, skeleton steel, truck and rail loading facilities. $150,000. Taylor & Porter, 3915 Plainville Rd., Mariemont, archts., O W. Motz, 420 E. McMiller St., engrs.

SOON LETS CONTRACT

Ga., Atlanta—SIGNAL CONTROL BLDG.—Seaboard Airline R.R. Co., W. D. Simpson, ch. engr., S.A.L.R.R. Bldg., Norfolk 10, Va., soon lets contract, signal control bldg

LOW BIDDERS

†California—TRANSMISSION LINES—Bureau Reclamation, Dpt. Interior, Box 2511, Sacramento, Aug. 23, transmission lines, Elverta-Perkins, Central Valley Proj., Sacramento Co., etc., from American Bridge Co., Frick Bldg., Pittsburgh, Pa., **$221,405.**

Calif., San Francisco — TRACK REMOVAL, etc.—Dpt. P. Wks., City Hall, Aug. 31, track removal and street imprv. San Bruno Ave. between Alemany Blvd. and Arleta Ave., from Fay Imprvt. Co., 760 Market St., **$298,215.**

Montana—RURAL DISTRIBUTION LINES—Sheridan County Electric Co-operative, Medicine Lake, Aug. 9, 284 mi. rural distr. lines, Sheridan and Roosevelt Counties, from Sydney T. Olsen Jr., 238 Ave. D., Billings, **$315,068.** CD 8/2.

Nebraska—RURAL DISTRIBUTION LINES—North Central Nebraska Rural Pub. Power Dist., Creighton, Aug. 18, 315.3 mi. rural distr. lines, Antelope, Knox and Holt Counties from W. L. Coston & Sons, 1st Natl. Bank Bldg., Birmingham, Ala., **$295,549.** CD 7/27

N. Y., Astoria—ATHLETIC FIELD—Comr. Parks, Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Zone 21, Sept. 1, reconstruct Astoria Athletic Field, incl altering bldg. and reconstruct masonry bulkhead adjacent to East River between 26 Ave. and 2 St., Queens Boro. Contr. No. Q-215-149 from O'Dowd & Kelvin Eng. ~~Co., 135~~ Front St., New York, **$100,992.** CD 8/24.

N. Y., New York—PLAYGROUND—Comr. Parks, Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., Zone 21, Sept. 1, construct playground and memorial site adjacent to P. S. 114 between Cherry and Monroe Sts., west of Catherine St. Contr. No. M-194-148 from O'Dowd & Kelvin Eng. Co., 135 Front St., **$196,863.** CD 8/24.

†N. C., Fort Bragg — SWIMMING POOL — U. S. Eng., 308 Customhouse, Wilmington, Aug. 31, swimming pool and field house, Eng-31-075-50-1, from T. A. Loving & Co., Bank of Wayne Bldg., Goldsboro, **$614,400.** Est $676,774. CD 8/11.

†Oregon — TRANSMISSION LINE — Bonneville Power Admin., 729 N. E. Oregon St., Portland, Aug. 23, clearing 44.6 mi. right of way for Warm Springs sect. of Maupin-Detroit 230 kv transmission line, Wasco Co. Inv. 4761 from V. & M. Operating Co., Oswego, **$129,000.** CD 8/8.

†Oregon — TRANSMISSION LINE — Bonneville Power Admin., 729 N. E. Oregon St., Portland, Zone 8, Aug. 26, clearing 14.25 mi. right of way, Lakeside-Coos River sect. of Reedsport Coos Bay 115 kv. transmission line, Inv. 4765, Coos Co. from N. P. Logging Co., Coquille, **$157,667.** CD 8/12.

Pa., Phila.—SERVICE, TRAFFIC TUNNELS—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Aug. 31, general constr. service and traffic tunnels and hot water generating station from C & T. Constr. Co. Inc., 810 Haddon Ave., Collingswood, N. J., **$115,472***** piping and equip. from C. E. Williames Co., Inc., 1261 N 26 St., Zone 21, **$56,565.** CD 8/5.

Tex., Orange—WHARF, DOCK—City and The Wharf & Dock Comn., Orange, Aug 23, wharf and dock imprvs., incl. railway approach trestle, shell full, dock apron from Trotti & Thomson, Inc., Box 70, Beaumont, **$116,400.** Est. $75,000 CD 8/5.

Wis., Green Bay—SWIMMING POOL etc.—Bd. Park Comrs., 409 E. Walnut St., rejected bids May 31, swimming pool and bath house, Fisk Park, L. B. **$199,595.** CD 6/15, under LB.

CONTRACTS AWARDED

Ala., Mobile—DOCKS—State Docks Comn., Mobile, dredging at Alabama State Docks, to Standard Dredging Co., Whitney Bldg., New Orleans, La., **$111,054.**

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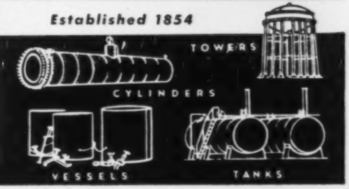

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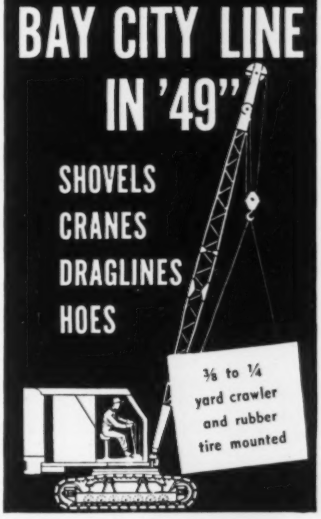
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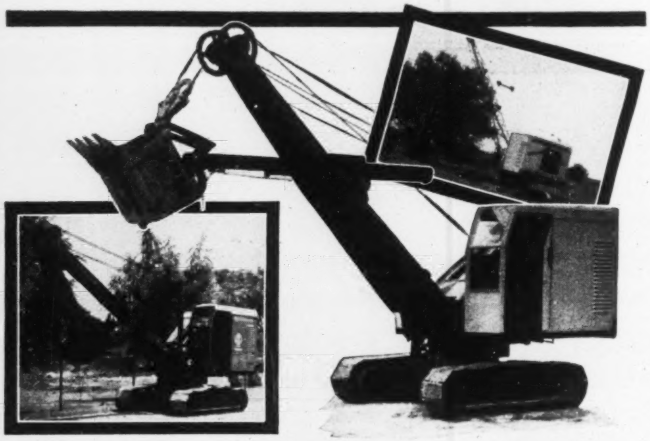

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Arizona—RURAL DISTRIBUTION LINES—Sulphur Springs Valley Electric Co-operative, Inc., Willcox, 123.5 mi. rural distr. line, Cochise Co., to Dykes Constr. Co., 2502 West Jackson St., Phoenix, labor $41,048, materials, $25,000; Total **$164,048.** CD 5/24/48.

Arkansas—RURAL DISTRIBUTION LINES—Carroll Electric Co-operative, R. G. Gates, mgr., Berryville, 283.11 mi. rural distr. lines and 16 mi. conversion in Benton, Carroll, Boone, Madison, Newton and Searcy Counties and Stone and Barry Counties, Missouri, to Southern Line Constr. Co., Inc., 818 Fall Bldg., Memphis, Tenn., **$386,657.** Bids 8/2. CD 7/21.

Ark., Little Rock—COLISEUM—State Livestock Show Comn., Pyramid Bldg., coliseum, to The Baldwin Co., Rector Bldg., **$335,700.** Est. $500,000. Awarded 9/2. CD 5/27.

Ark., Little Rock—SEED HOUSE—Swift & Co., E. 17 St., seed house, to Mac's Builders, 120 E. 3 St., Little Rock, Approx. **$60,000.**

California—RURAL DISTRIBUTION LINES—Surprise Valley Electrification Corp., Box K, Alturas, 117.6 mi. rural distr. lines, Modoc Co., to Del Monte Electric Co., 3275 San Leandro St., Oakland, Zone 3, **$256,235.** Wismer & Becker, 1219 28 St., Sacramento, Zone 16, engrs. CD 12/9.

Georgia—RURAL DISTRIBUTION LINES—Amicalola Electric membership Corp., Jasper, 233.3 mi. rural distr. lines, Pickens Co., to Roy Richards Constr. Co., Carrollton, **$283,359.** CD 6/1.

Kansas—RURAL DISTRIBUTION LINES—Norton-Decatur Cooperative, Electric Co. Inc., Norton, 443 mi. rural distr. line, Norton Co., to J. R. Foree, 302 National Bank Bldg., Topeka, labor **$101,745,** material **$443,000.** Total $544,745. Bids 6/17. CD 7/5, under LB

Minn., Rochester — TUNNEL—State Dpt. Admin., State Capitol, St. Paul, concrete tunnel, incl. wiring, piping, ventilation, Rochester State Hospital, to Hagstrom Constr. Co., 1567 Selby Ave., St. Paul, **$165,750.** CD 10/17/47, under Public Bldgs.

Nebraska—RURAL DISTRIBUTION LINES—Eastern Nebraska Public Power Dist., Syracuse, 340 mi. rural distr. lines, Johnson, Nemaha, Gage, Pawnee and Richardson Counties, to W. L. Coston & Son, 1st Natl. Bldg., Birmingham, Ala., **$391,310.** Bids 8/26. CD 8/9.

New Mexico — RURAL DISTRIBUTION LINES—Columbus Electric Co-operative, Inc., Columbus, 50 mi. rural distr. lines, Luna Co., to Walker Constr. Co., 515 E. Jefferson St., Dallas, Tex., labor, **$19,515;** materials **$50,000,** total $69,515. Tynes & Loftin, 512 Heard Bldg., Phoenix, Ariz., engrs. CD 12/3/47

♦Pennsylvania—RAILROAD RELOCATION—U. S. Eng., 925 New Federal Bldg., Pittsburgh, Zone 19, stone ballasting and grade crossings, relocation of Conemaugh Div., Pennsylvania R. R., Conemaugh R. R., Eng-36-058-49-154 to Wm. A. Smith Contrg. Co., Inc., of Missouri, 1401 Fairfax Trafficway, Kansas City, Kan., **$422,850.** Bids 7/28. CD 7/5.

Tex., Corpus Christi — GAS LINES — City, c/o Gas Dpt., Corpus Christi, installing and replacing addnl. natural gas lines, force-account. **$150,000.** B. P. Ledbetter, engr. CD 11/18/48.

Tenn., Nashville—DRIVE IN THEATER—Fred Goldblatt, 326 Church St., drive in theater. Owner builds. Approx. **$50,000.**

●Wash., Yakima—SUBSTATION, etc.—Pacific Power & Light Co., Public Service Bldg., Portland, Ore., Orchard substation and 115,000 volt transmission line, day labor, **$600,000.**

Ont., Niagara Falls—ARENA—Municipality, concrete, steel, brick arena to Zimmerman Constr. Co. Ltd., 1023 Stamford St., and Standard Steel Ltd., Port Robinson, **$134,247,** Bids 8/18 CD 8/10.

Ont., Windsor—SWIMMING POOL—Municipality, swimming pool to Loring Constr. Co. Ltd., 52 Chatham St., **$75,000.** Sheppard & Masson, 52 Chatham St., archts. R. J. Desmarais, city engr. CD 1/17/46.

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CONSTRUCTION REPORTS–Second Section

WATER SUPPLY

BIDS ASKED

September 22

La., Gretna—East Jefferson Waterworks Dist. 1, Jefferson Hy. and Arnoult Rd., WW distr. sys. addns. Plans deposit $15. S. N. Applewhite, 424 Williandon St., New Orleans, engr.

Mass., Boston—Metropolitan Dist. Comn. 20 Somerset St., Boston, 10,000 ft. 24 in. pipeline to Hyde Park Pumping Station, Contr. 170. Plans deposit $10; gate valves, airvalves, aircocks, pressure reducing valves, Venturi meters, appurtenances for aqueducts and pipelines, Boston and Quincy, Milton and Brookline, Contr. 178. Plans deposit $5. Karl R. Kennison, ch. engr. CD 5/12/44.

†N. M., Albuquerque—U. S. Eng., P. O. Box 1538, water supply, pumping station, electric transmission line, etc. Approx. $100,000. CD 8/31.

Tex., Gilmer—City, Contr. A, drilling, developing deep water supply well, $30,000; Contr. B, 500,000 gal. rein.-con. ground water storage tank and 2 sewage lift stations, $100,000; Contr. C, 6- to 14-in. c. i. water pipelines, $50,000. Plans deposit $25 each. Wisenbaker, Fix & Assoc., 1415 N. Dixie Dr., Tyler, engrs. CD 8/8.

About September 29

†N. M., Albuquerque—U. S. Eng., P. O. Box 1538, Albuquerque, water supply system, Stage IV, Sandia Base, Serial No. Eng-29-005-50-9.

LOW BIDDERS

Ala., Attalla—City, Sept. 1, water distr. sys. imprvs., from Harbert Constr. Corp., 2337 20 Ave., Birmingham, **$144,886.** CD 9/25.

Calif., San Diego—City, Civic Center Bldg., Aug. 30, 15,500 ft. 36 in. and 24,000 ft. 30 in. connecting line to new filtration plant and La Jolla Area, Kearny Mesa Pipe Line, Schedule 1, from American Pipe & Constr. Co. 4635 Firestone Blvd., South Gate, **$208,266***** Schedule IA, from Pipe Line Constr. Co., 2931 Main St., Riverside, **$134,718;** Schedule II, from Consolidated Western Steel Corp., 5700 S. Eastern Ave., Los Angeles, **$223,365***** Schedule IIA, from A. B. C. Constr. Co., 14346 Lakewood Blvd., Paramount, **$162,656.** Est. $1,100,000. CD 8/9.

Ga., Newman — City, filtration plant addn., from Harbert Constr. Corp., 2337 20 Ave., Birmingham, Ala., **$187,000.** CD 8/12.

CONTRACTS AWARDED

Calif., Santa Ana—Orange Co. Flood Control Dist., Santa Ana, infiltration pipeline exten., to Charles T. Brown Co., 1955 6 St., San Fernando, **$100,980.** Bids 8/30. CD 8/17/45

Okla., Antlers—City, City Hall, dam on Kiamichi River, filter plant, watermain exten., to Southern Constr. Co., 1705 W. Reno St., Zone 4, Oklahoma City, **$134,875.** Est. $150,000. Awarded 8/29.

Okla., Lake Murray—State Planning Bd., Capitol Bldg., Zone 5, water line to serve lodge bldg., to Trigleth & Sons, Ardmore, **$30,750.** Est. $32,500. Clarence Burch, Capitol, Oklahoma City, Zone 5, engr.

Tex., Brownsville—City, Brownsville, 9,700 lin. ft. 16 in. c.i. water pipelines, purchase and hire. **$36,000.** Bids 7/28. CD 7/19.

Tex., Houston—S. N. Adams, 3713 Inwood St., waterlines and facilities to Leslie P. Littlefield Co., Harrisburg Blvd., **$33,339.** CD 8/11.

Tex., Houston—Southcrest, Inc., 4151 Lanark Lane, c. i. water lines, facilities, to Vernon L. Miller, 2015 McClendon St., Approx. **$30,000.** CD 9/2.

Tex., Lawn—City, Lawn, addnl. WW. extens. and imprvs. Purchase and hire. **$46,000.** French Engr. Co., P. O. Box 1127, Abilene, engrs.

Tex., Victoria—E. I. Du Pont de Nemours & Co., du Pont Bldg., Wilmington, Del., c. i. water pipeline sys., 1700 acre area of Nylon Chemical Plant, near here Owner builds, **$55,000.** Frank R MacKie, du Pont Bldg., Wilmington, 98, Del., ch. engr.

Wyo., Newcastle—City, water sys. imprv., to W. J. Parker Constr. Co., Standard Oil Bldg., Omaha, Neb. **$165,000.** Bids 8/8.

SEWERS, WASTE DISPOSAL

BIDS ASKED

September 19

Conn., Hartford—State, G. Albert Hill, hy. comr., State Office Bldg., drainage system 2,159 lin. ft. High Ridge Rd., Stamford; 1,471 ft. storm sewer installation, in Suffield and North Sts., Windsor Locks.

Md., Towson—Bd. Comrs. Baltimore Co., Courthouse, Towson, Contr. 169 D. S. & W., approx. 2,077 lin. ft. 15- to 48- in., rein.-con. pipe drains, and jacking, 10,393 lin. ft. 6- to 15-in. vitr. clay pipe for sewers and house connections, 22,820 lin. ft. 6- to 12-in. c. i. watermains, etc Plans deposit $5. Wm. F. Neale, ch. engr

September 21

Pa., West Chester—Comrs. Chester Co., West Chester, sewage treatment plant, $50,000. Baader Young & Schultze, 1500 Walnut St., Phila., Pa., archts CD 10/14.

September 26

Ala., Mountain Brook—City, sanitary sewer imprvs. J. W. Goodwin Eng. Co., 726 S. 29 St., Birmingham, engr.

September 27

Tex., Kermit—City, sanitary sewerage sys., $100,000. Freese & Nichols, 407 Danciger Bldg., Ft. Worth, engrs. CD 9/6.

LOW BIDDERS

Calif., Los Angeles—City, Aug. 31, influent conduits Hyperion Activated Sludge Plant, from F. W. Case & Harry Gast, 770 Balboa Blvd., **$294,000.** Est $300,000. CD 8/19.

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, Aug. 30, 4.53 mi. 6- to 12-in. vitr. clay sanitary sewers in Church St. C. I. 1264, Pico, from Matt J. Zaich Co., 6828 Farmdale Ave., **$171,448.** Est. $135,915. CD 8/10.

Md., Baltimore—Mayor & City Council, City Hall, rejected bids Aug. 10, Sanitary Contr. 351, L. B. **$165,700.** CD 8/17, under LB.

Tex., Dallas—City, Earl Goforth, secy., Aug. 30, storm sewers in Marburg St., from Ferguson Constr. Co., 5006 2 Ave., Dallas, **$53,300,** est. $60,000; sanitary sewers in Lakeland Terrace and Casa Linda Park Addn., from H. J. Hapell & Co., 550 1 E. Admiral Blvd., Tulsa, Okla., **$94,868.** CD 8/19.

Tex., Jacinto City—Jacinto City, Lonzo Chandler, mayor, 10326 Palestine St., Houston, cancelled bids to have been opened Sept. 27, storm sewers. **$135,000.** Will readvertise. CD 9/8.

Tex., Lubbock—City, Lubbock, Aug. 25, sewer lines and laterals from Panhandle Constr. Co., 620 Texas Ave., **$98,605.** W. N. Harris, city engr. CD 12/15/47.

Tex., Rogers—City, City Hall, Aug. 31, sanitary sewer lines, treatment plant from J. D. George Co., 3331 Parkwood St., Houston, and Clay P. Carey & Co., Brownwood, **$50,181,** Est. $90,000. CD 8/17.

Tex., San Antonio—Albert Hirschfeld, Milam Bldg., and Wm. Ochse, Alamo National Bldg., San Antonio, Aug. 30, sewer lines, from Dean Word & Co., 446 E. Rosewood St. **$58,221.** CD 8/22.

Ont., Mount Forest—Town, R. M. Grant, clk., Aug. 10, 32,458 ft. 8 in. sewer, 137 manholes, 1 collecting basin, sewage pump and pressure sewer, from Swansea Constr. Co. Ltd., 363 Rogers Rd., Toronto, Approx. **$222,897.** CD 7/28.

CONTRACTS AWARDED

Calif., Davis—Bd. Regents University of California, Berkeley, sewage treatment plant and refuse disposal unit for Davis Campus, to Fred J. Early, 369 Pine St., San Francisco, **$787,500.** Bids 8/19. CD 8/25, under LB.

●Calif., Oakland—East Bay Municipal Utility Dist., 512 16 St., sewer outfall—land and subaqueous sections Spec. SD-20, Schedule 1, to Ben C. Gerwick, 112 Market St., San Francisco, **$1,687,916;** Schedule 2, to Healy-Tibbitts Constr. Co., 411 Brannan St., San Francisco, **$1,267,072.** CD 8/2, under LB.

Calif., Walnut Creek—Central Contra Costa Sanitary Dist., 1822 Mt. Diablo Blvd., sanitary sewers in Local Imprv. Dist. 15, to Stolte Inc., 8451 San Leandro St., Oakland, **$97,795.** Bids 9/1, CD 8/18.

Md., Hyattsville — Washington Suburban Sanitary Comn., Hamilton St., Contr. 25-D, storm drainage construction to Intercounty Constr. Corp., 4720 Baltimore Ave., **$58,130.** Awarded 8/25. CD 8/26.

Minn., Richfield (P. O. Minneapolis)—Village, J. Stewart, clk., storm sewers, Dists. C-1 and 0, to Sanstrom & Hafner, 720 E. Superior St., Duluth, **$111,000.** Dist. D-1, to Lamettei & Lamettei, 615 Drake St., St. Paul, **$97,000.** CD 8/17.

Tex., Houston—S. N. Adams, 3713 Inwood St., sanitary and storm sewers to Leslie F. Littlefield Co., Harrisburg Bldg., **$58,000.** CD 8/11.

Tex., Houston—Southcrest, Inc., 4151 Lanark Lane, sanitary and storm sewers, to Vernon L. Miller, 2015 McClendon St. Approx. **$63,300.** CD 9/1.

Tex., Orange—Alan B. McCorquodale, Orange, sanitary sewers. Owner builds. Approx. **$60,000.**

Tex., Victoria—E. I. du Pont de Nemours & Co., du Pont Bldg., Wilmington, Del., sanitary and storm sewers, 10,700 acre Nylon Chemical Plant zone, near here, Owner builds, **$85,000.** Frank R. MacKie, du Pont Bldg., Wilmington, 98, Del., ch. engr.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

September 19
Connecticut
September 21
Louisiana
September 23
Kentucky
Missouri
Washington
September 29
California
New Jersey
September 30
New Jersey

LOW BIDDERS

Pennsylvania—State Hy. Dpt., Harrisburg, Sept. 2, crushed aggregate base, bit. surf. and I-beam bridge over Octoraro Creek, from point 4 mi. from Kirkwood to point 3 mi. from Oxford, L. R. 527 (2), T. R. 472, Colerain and Lower Oxford Twp., Lancaster and Chester Counties, from Edward A. Daylor Inc., Box 551, Coatesville, $164,671. CD 8/11.

CONTRACTS AWARDED

Kan., Newton—City, City Hall, 4 bridges, to C. E. McBurney, Newton, **$67,543.** Shockley Engr. Co., Reliance Bldg., Kansas City, Mo., engr. Bids 8/25.

Kentucky—State Hy. Dpt., Frankfort, bridge and b. con. approaches, 0.159 mi. Greensburg-Columbia Rd., F 143 (5) SP 44-56, Green Co., to Foster & Creighton, Nashville, **$362,274.** CD 9/2, under LB.

Maine—State Hy. Dpt., Augusta, Arrowsic Bridge, Arrowsic-Woolwich, F. A. P. S 154 (2), Contr. 1, to W. H. Hinman, Inc., North Anson, **$225,533;** Contr. 2, to Harris Structural Steel Co., 419 4 Ave., New York, N. Y., **$223,483.** Bids 8/31. CD 8/18.

New York—Bureau Contracts and Accounts, Albany, 2 grade separation structures to carry Bronx River Parkway over Tremont Ave., 180 St. and tracks of N. Y., N. Y. and H. R. R. Bronx Co., to Brookfield Constr. Co., Inc., 521 Fifth Ave., Zone 17, **$915,827.** Bids 6/22. CD 7/4, under LB.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

September 19
Connecticut
September 21
Louisiana
September 22
Minnesota
Missouri
September 23
Kentucky
Washington
September 28
California
September 30
Pennsylvania
October 5
California
Louisiana
Bids Asked
Newfoundland

September 27

Calif., Agnews—State Div. Architecture, P. Wks. Bldg., Sacramento, grading, paving, etc. at State Hospital, Anson Boyd, Sacramento, state archt.

Calif., Napa—State Div. Architecture, P. Wks. Bldg., Sacramento, road work at State Hospital Anson Boyd, Sacramento, state archt.

Calif., Stockton—State Div. Architecture, Pub. Wks. Bldg., Sacramento, grading, paving, curbs and gutters at Stockton State Hospital, Anson Boyd, Sacramento, state archt.

September 28

Calif., Los Angeles—City, imprv. Addison St. and Willis Ave. $61,086. Lloyd Aldrich, city engr.

●†Calif., Los Angeles—U. S. Eng., 751 S. Figueroa St., imprv. Magnolia Blvd. to Van Owen St., Tujunga Wash, CIVENG-50-7, $2,500,000.

LOW BIDDERS

California—State Div. Hys., Sacramento, Aug. 31, plant mix surf. over existing pavement 7.3 mi. between Nicholaus Bridge and Tudor Rd., Sutter Co., from A. Teichert & Son, Inc., Box 1113, Sacramento, **$66,540.** CD 8/8.

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, Aug. 30, imprv. Normandie Ave. between Manchester Ave. and 101 St., from Basich Bros. Constr. Co., and Basich Bros., 3850 San Gabriel Blvd., San Gabriel, **$167,748.** CD 8/10.

Calif., Sacramento—Sacramento Co., Courthouse, received no bids Aug. 31, imprv. streets in Freeport Manor. Approx. **$50,000.** Joseph Spink, 408 Calif. Fruit Bldg., engr.

Colorado—City and Denver Co., T. P. Campbell, mgr. Imprvt. & Parks, City and County Bldg., Aug. 31, paving district on 17 St. from Broadway to Wynkoop, removing tramway tracks and present pavement and c. conc. repaving street from curb to curb Paving District 1, from Engineering Constr. Co., 4150 Elati St., Denver, **$188,683,** Est. $188,839. CD 8/23.

Colorado—State Hy. Dpt., Denver, Aug. 24, grading, surf. and structures 1.699 mi. State Hy. 11 between Wolcott and State Bridge, Colo. Proj. S 0121 (5) Units 1 and 2, Eagle Co., from Trout & Bonkowski, 3166 W. Walsh Pl., Denver, **$85,319,** Est. $90,600. CD 8/19.

†Idaho—Bureau P. Rds., General Services Admin., 609½ Bannock St., Boise, rejected bids Aug. 30, clearing 6.312 mi. Lewis & Clark Hy., Proj. 16-G, Idaho Co., L. B. **$84,805.** CD 8/18.

Kentucky—State Hy. Dpt., Frankfort, rejected bids Aug. 26, traffic bound limestone 9.747 mi. RS 48-628, 48-68, 48-568 (2), 48-708, 48-568 (1) 48-508 and 48-608, Harlan Co. Group 2, L. B. **$72,139.** CD 8/10.

Kentucky—State Hy. Dpt., Frankfort, rejected bids Aug. 12, traffic bound limestone 6.058 mi. Forks of Elkhorn-Stamping Ground Rd. RS 37-465, Franklin Co., L. B. **$86,346.** CD 8/19, under LB.

Md., Baltimore—Mayor & City Council, City Hall, Aug. 31, sheet asph. paving, Contr. 1015, from Mahoney Bros., 24 Knickerbocker Bldg., **$124,422.**

New Hampshire—State Hy. Dpt., Concord, plant mix surf. 1.771 mi. Main St. in City of Berlin, U 136 (8), from W. H. Hinman, North Anson, Me., **$162,496.**

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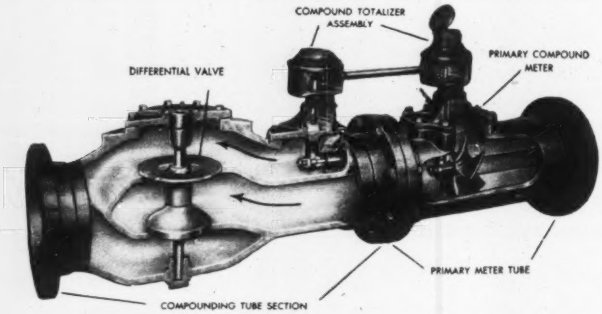

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●Pennsylvania — State Hy. Dpt., Harrisburg, Sept. 2, c. conc. 14,029 ft. L.R. 247, Sect. 7, T.R. 88, Castle Shannon Boro, Bethel Twp., Allegheny Co., from Allegheny Asphalt & Paving Co., Inc., 801 Bingham St., Pittsburgh, Zone 3, **$259,651*****c. conc. 34,820 ft. one I-beam bridge and two rein.-con. bridges, L. R. 149 sect. 6B, 06028 Sect. 2, 382, Sect. 1, 06050 Sect. 2, T.R.U.S. 422, from point near Lebanon-Berks Co. line to point in Robesonia Boro, Marion and Heidlburg Twps., Womelsdorf and Rosseonia Boros, Berks Co., from C. W. Good, Inc., 726 Columbia Ave., Lancaster, **$1,578,096*****crushed aggregate base, bit. surf. 18,055 ft. rein.-con. bridge L.R. 137, (3), T.R. 72, Lebanon Cornwall Boro, North Cornwall Twp., Lebanon Co., from G. B. Cramer Constr. Co., Inc., P. O. Box 274, Lebanon, **$245,793.** CD 8/11.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, paving Schedules B-8, B-14, B-15, and paving Schedules B-3, B-4, B-5, B-7, from Mack Paving & Constr. Co., Luzerne and C Sts., Phila., **$51,441** and **$54,176** respèctively***paving Schedule G, from Frank Mark Co., Caster Ave. and Wingohocking St., Phila., **$133,298*****paving Schedules A-4 and A-6, from Robert Hawthorne, 1701 N. 2 St., Phila., **$50,447*****paving Schedule C, H-1 and paving H-2, from Kelly Paving Co., 1347 E. High St., **$65,194** and **$61,995** respectively.

Tex., Anahuac—Chambers Co., c/o Judge F. E. Williams, Courthouse, Aug. 29, flexible base asph. surf. 6½ mi. Eagle Ferry Rd., from Bilbig Constr. Co., Box 5930, Dallas, **$118,979.**

Tex., Beaumont—City, street imprvs., paving and storm sewers, Gaylynn and Northway Arms Aid, from Trotti & Thomson, Beaumont, **$99,685.** CD 2/11.

Tex., Dallas—City, Aug. 30, paving Industrial Blvd., Jefferson and Wycliff Aves., from Uvalde Constr. Co., Box 3027 and Texas Bitulithic Co., 111 Commerce St., **$84,302.** CD 8/19.

Tex., Jacinto City — Jacinto City, Lonzo Chandler, mayor, 10326 Palestine St., Houston, cancelled bids to have been opened Sept. 27, asph. paving streets, **$140,000.** Will readvertise. CD 9/8.

Tex., San Antonio—City, City Hall, Aug. 25, c. conc. paving extens. South end Arsenal on Main Ave. to S. Alamo from Killian-House Co., 1325 W. Poplar St., **$59,836.** W. W. Toxey, city engr. CD 8/10, under LB.

Tex., San Antonio — Albert Hirschfeld, Milam Bldg., and Wm. Ochse, Alamo National Bldg., San Antonio, Aug. 30, street construction and paving, from Dean Word & Co., 446 E. Rosewood St., San Antonio, **$51,116.** CD 8/22.

Tex., Wharton—Wharton Co., D. B. King, judge, Aug. 30, grading, asph. surf. 12.7 mi. roads, Contr. D, from Brown & Root, Inc., Box 3, Houston, **$57,265.** CD 8/23.

Washington — State Hy. Dpt., Olympia, Sept. 2, b. conc. resurf. 1.336 mi. Primary State Hys. 1 and 8 and city street in Vancouver, Clark Co., from United Contg. Co., Stock Exchange Bldg., Portland, Ore., **$52,145*****clearing, grading, draining, surf. constr. log bridges 3.428 mi. mine-to-market road, Lennox Creek to Cougar Creek, King Co., from Selective Logging Co., North Bend, **$67,492*****surf., stockpiling 10.934 mi. Primary State Hy. 8, Prindle to North Bonneville, Skamania Co., from Smith Bros. Inc., Vancouver, **$179,251,** CD 8/17***grading, draining, surf. 3.505 mi. Secondary State Hy. 2-F, Odair to Electric City, Sect. 5, Grant Co., from Roy L. Bair & Co., 1220 Ide St., Spokane, **$244,810.** CD 8/19.

British Columbia—Province of British Columbia, Parliament Bldgs., Victoria, Aug. 30, reconstruct 11.08 mi. Westwold-Falkland Sect., Kamloops-Vernon Rd., from Emil Anderson Constr. Co., Hope, **$253,845.** CD 8/24.

CONTRACTS AWARDED

Conn., Ansonia—City, Thomas F. Pratt, supt. P. Wks., City Hall, constructing street parallel to Main St. near Eagle House to Tremont St., also exten. Bridge St., to Mariani Constr. Co., 222 Forbes St., New Haven, **$115,500.** Est. $150,000. Bids 7/22.

La., New Orleans — City, Purch. Div., City Hall, street surf. and drainage projects, incl. Proposal 11574., temporary surf., Proposal 11591 subsurf. paving, and drainage, Proposal 11594, subsurface drainage, to R. P. Farnsworth & Co. Inc., 1515 S. Salcedo St., **$54,228*****subsurface drainage projects, Proposals 11479, 11481, 11483, 11545, 11555 and 11559 to Mike Cullen, 3948 Panger St., **$96,965*****subsurface drainage projects, Proposals 11,480, 11,484, 11,558, 11,575, to A. N. Goldberg, Maison Blanche Bldg., **$136,686*****street projects, Proposals 11,526, 11,530, 11,556, 11,589, to Lang Co., 2500 Poydras St., **$143,176*****c. conc. resurf. streets, Proposals 11,527 and 11,528, asphalt block resurf. Proposal 11,529, temporary surf. asphalt block, Proposal 11,590, to Texas Bitulithic Co., Burma Rd., **$11,708*****bridge and subsurface drainage projects, incl. Proposal 11,572, bridge repair Proposal 11,573 and c. conc. paving Proposal 11,588 to Boh Bros., 2400 Cypress St., **$89,986.** Grand total, $632,749. Bids 8/26, awarded 8/29.

Kan., Osborne — City, City Hall, street imprvs., to San-Ore Constr. Co., McPherson, **$80,496.** Servis & Van Doren, Hays, engrs. Bids 8/19.

Kentucky—State Hy. Dpt., Frankfort, local bank or creek grav. 4.933 mi. Township Rd., RS 20-144, Carlisle Co., to Ford-Holman Constr. Co., Bardwell, **$72,139.** CD 9/2.

Maine—State Hy. Dpt., Augusta, bit. grav. 2.197 mi. Eddington, F. A. S. P. S. 66 (2), to H. E. Sargent Inc., Stillwater, **$74,016;** bit. macadam 0.789 mi. Bar Harbor, F. A. S. P. S 68 (1), to Frank Rossi, RFD 5A, Gardiner, **$77,922.** CD 8/23.

Nebraska—State Dpt. Roads & Irrigation, Lincoln, c. conc. Chicago Ave., SF 19902, Plattsmouth, Cass Co., to National Constr. Co., 1335 S. 20 St., Omaha, **$76,422.** Bids 8/31. CD 8/24.

Okla., Edin—City, City Hall, c. conc. paving 14 blocks, Dist. 295, to Banta Constr. Co., 1646 W. Main St., Oklahoma City, Zone 4, **$67,940** est. $70,000; c. conc. Dist. 1098, to Metropolitan Paving Co., 1600 W. Reno St., Oklahoma City, Zone 4, **$131,698** est. $135,000. Awarded 8/30. CD 6/30.

Ore., Springfield—City, City Hall, street imprvs., to Del R. Beebe, Eugene, **$62,024.** Awarded 8/31. CD 11/24/47.

Tex., Angleton — Brazoria Co., c/o Court House Angleton, road imprvs., drainage, force account, **$334,940.** CD 8/29.

Tex., Houston—S. N. Adams, 3713 Inwood St., contr. and asph. paving to Leslie P. Littlefield Co., Harrisburg Blvd., **$59,999.** CD 8/11.

Tex., Houston—Dr. J. R. McIntyre, 4207 Polk St., street paving and site development, purchase and hire. Approx **$75,000.**

Tex., Houston—J. Rosenthal, Southland Life Annex Bldg., Dallas, grading, asphalt paving area and providing concrete open frame for auto parking, Purchase and Hire, Approx. **$75,000.** Edward P. Potter, 1811 Southgate St., engr.

Tex., Houston—Southcrest, Inc., 4151 Lanark Lane, asphalt paving in portion Sect. 2 Southcrest Addn., to Vernon L. Miller, 2015 McClendon St. Approx. **$50,000.** CD 9/1.

Tex., Seymour—City, City Hall, asph. paving 8,000 lin. ft. concrete curbs, storm sewers, to Shephard Luce, & Hurd, Vernon, **$120,000.** CD 6/2, under LB.

Tex., Sinton—City, Sinton, concrete curbs and gutters on 2 main highways through city, asph. paving to Heldenfels Bros., 521 McBride Lane, Corpus Christi, **$66,125.** John S. Fenner, Sinton county, engr J. H. Flood & Co., Amicable Bldg., Waco, engrs.

EARTHWORK, WATERWAYS

BIDS ASKED

About September 20

+Illinois—U. S. Eng., 826 U. S. Court House and Custom House, 1114 Market St., St. Louis, 1, Mo., public access areas, Kampsville Old Lock Site, Calhoun Co., west bank Illinois River, at mile 32 above confluence with Mississippi River.

September 20

+Illinois—U. S. Eng., 826 U. S. Court House and Custom House, 1114 Market St., St. Louis, 1, Mo., public access areas, Kampsville Old Lock Site, Calhoun Co., west bank Illinois River, at Mile 32, above confluence with Mississippi River, Serial No. Eng. 23-065-50-15.

Ia., Hampton—Drainage Dist. 3, Franklin Co., Hampton, 68,731 cu. yd. channel excav. 2,482 lin. ft. 24- to 30-in. drain tile, Rowat & Murray, Belmond, engrs.

+Missouri—U. S. Eng., 826 U. S. Court House and Custom House, 1114 Market St., St. Louis, Zone 1, public access areas, Bradley Island, adjacent to Lock 25, about 241.5 mi. above mouth of Ohio River, west bank of Mississippi River, Sandy Island, west bank river at mile 245 Lincoln Co., Serial No. CIVENG 23-065-50-15. CD 9/8.

September 21

La., Marksville — Avoyelles Parish Police Jury, Marksville, approx. 510,000 cu. yd. channel excav., and approx. 3.44 acres clearing, grubbing.

September 23

+Arkansas—U. S. Eng., foot of Prytania St., New Orleans, La., approx. 120,000 cu. yd. semi-compacted earthwork on Red River Levees, Invitation No. 50-59.

+Illinois—U. S. Eng., 826 U. S. Court House and Custom House, 1114 Market St., St. Louis, Mo., levees, Columbia Drainage & Levee Dist., (Proj. Item III-A) Monroe Co., east bank Mississippi River between miles 157.7 and 159.5 above mouth of Ohio and involving 143,000 cu. yd. levee embankment, 21 acres seeding, mulching, Serial No. CIVENG 23-065-50-16. CD 9/2.

September 27

+Mississippi—U. S. Eng., P. O. Box 60, Vicksburg, triangular frame retard constr., Mississippi River, Item R 490.7L, Mayersville, Serial No. CIVENG 22-052-50-39.

LOW BIDDERS

Calif., San Diego—City, 1600 Pacific Hy., Sept. 1, 1,896,128 cu. yd. dredging four areas in San Diego Bay, from Franks Dredging Co. & Guy F. Atkinson Co., Box 259, Long Beach, **$649,247.** Est. $500,000. CD 8/9.

+Colorado—Bureau Reclamation, Dpt. Interior, Bldg 1-A, Denver Federal Center, Denver, Colo., Aug. 23, Schedule 1, constructing Jay Creek siphon, Station 1068 plus 03, Pannia Proj., Spec. 2740, from A. F. Burkhard, Hotchkiss, **$58,423.** CD 7/25.

+Illinois—U. S. Eng., 826 U. S. Court House and Custom House, St. Louis, Zone 1, Mo., Sept. 1, levee construction along east bank Mississippi River, via St. Louis, Mississippi River mile 179.2 to 179.9 above mouth of Ohio

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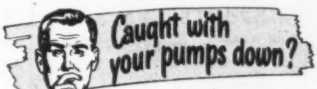
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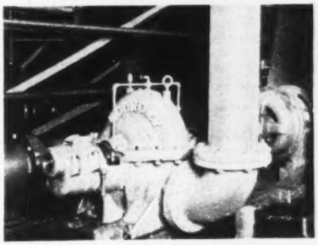

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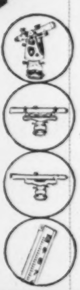

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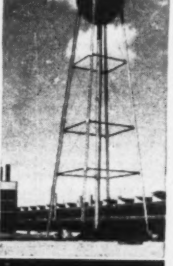

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River, east Side Levee and Sanitary Dist., St. Clair Co., Serial No. CIVENG 23-045-50-10, from H. F. Hardwick Co., Beardstown, **$75,731.** Est. $156,403. CD 8/16.

†Louisiana—U. S. Eng., foot Prytania St., New Orleans, Aug. 31, approx. 590,000 cu. yd. uncompacted earthwork, Serial No. Eng. 16-047-50-48, Iberville Parish, from Walter P. Villere, 1100 S. Claiborne St., New Orleans, **$139,771.** CD 8/23.

†Louisiana—U. S. Eng., foot Prytania St., New Orleans, Aug. 31, approx. 430,000 cu. yd. hydraulic earthwork for enlargement, East Atchafalaya Basin Protection Levee, St. Martin Parish, from Jahncke Service, Inc., 814 Howard Ave., New Orleans, **$330,820.** CD 8/19.

†Louisiana—U. S. Eng., P. O. Box 60 Vicksburg, Miss., approx. 700,000 cu. yd. semi-compacted Type 2 earthfill, enlargement, Bedford River Levee, approx. 60,500 cu. yd. uncompacted type 3 earthfill embankment, Spur Levee, Madison Parish Serial No. 50-39, from Ace Mining & Contg. Co., Inc., RFD 2, Hughes, Ark., **$189,212**; approx. 1,770,000 cu. yd. semi-compacted levee embankment, Mississippi River Levees, Tensas Parish, Serial No. Eng. 50-38, from Hughes Constr. Co., San Angelo, Tex., **$436,659.** CD 8/16.

†Missouri—U. S. Eng., P. O. Box 97 Memphis, Zone 1, Tenn., approx. 610,000 cu. yd. earthwork, levee construction Dunklin Co., Serial No. CIVENG 40-041-50-8, to Pioneer Contg., Co. Inc., Dyersburg, Tenn., **$101,138.** Bids 8/16. CD 8/4.

†Oregon—U. S. Eng., Pittock Block, Portland, Zone 5, Aug. 31, dredging main ship channel in Umpqua River from Reedsport to 4.4 mi. above mouth to depth 22 ft. wide, Douglas Co., CIVENG-35-026-50-67, from Manson Constr. & Eng. Co. & Osberg Constr. Co., 821 Alaskan Way, Seattle, 4, Wash., **$189,123.** CD 8/18.

CONTRACTS AWARDED

Fla., Miami Beach — Gulfstream Apartments, c/o contractors, groynes, to Reed Constr. Corp., 1345 20 St., **$30,000.**

Tex., Columbus—Colorado County Soil Conservation Dist., Columbus, grading, sitching, earthen tanks, terracing, etc., conservation proj. Owner builds, Approx. **$100,000.** CD 8/25.

Tex., Donna—Southmost Soil Conservation Dist., Donna, soil and water conservation, drainage, terracing, revetments, earthen water tanks. Owner builds. **$85,000.** CD 8/29.

Tex., Van Horn—Van Horn Irrigated Farms, Inc., D. C. Mead, Maria, 12,000 acre irrigation project. Owner builds. Approx. **$100,000.** CD 8/29.

†Washington—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, levee rehabilitation on Yakima River, Buena, to W. Sprague, 9509 49 Ave. N. E., Seattle, **$36,989.** Est. $49,457. Bids 8/30. CD 8/17.

AIRPORTS AND AIRBASES

BIDS ASKED

September 21

R. I., Warwick—RUNWAY EXTEN., etc.—Div. Purchases, Franklyn A. Adams, state purchasing agt., State House, Smith St., airport construction, N. E.—S. W. Runway Exten. paved runway, taxiways, appurtenances, Proj. 9120-42 Theodore Francis Greene. Plans deposit $20.

September 26

Tex., McCamey—AIRPORT IMPRVS.—S. H. Fisher, judge, Upton Co., airport imprvs., administration bldg. $100,000. Plans deposit $25. Allied Engineers, Inc., Fort Worth National Bank Bldg., Ft. Worth, engr.

CONTRACTS AWARDED

Tex., Houston—HANGARS—J. D. Reed Co., Inc., Municipal Airport, 2 storage hangars, separate contracts, **$119,000.** CD 6/9/48.

†Alaska — TRANSMISSION SYSTEM, etc.—U. S. Eng., Anchorage, 13.2 kv underground transmission system and substation and 2400 volt underground power distr. sys. at Fort Richardson, DEF-15, to City Electric Co., Anchorage, **$132,000.** Est. $153,087. CD 8/11.

●†Alaska—ROADS, etc.—U. S. Eng., Anchorage, roads, streets and drainage facilities, Fort Richardson DEF-15 and sewage treatment plant and water treatment plant, Ladd Air Force Base, DEF-17, Fairbanks, to Morrison-Knudsen and Peter Kiewit Sons Co., Hoge Bldg., Seattle, 4, Wash., **$675,680,** est. $932,521 and **$863,247,** est. $930,467 respectively. Bids 9/1. CD 9/7, under LB.

PUBLIC BUILDINGS

BIDS ASKED

September 19

†N. Y., Niagara Falls—POST OFFICE—Pub. Bldgs. Admin., 731 Custom House, New York, Zone 4, misc. repairs to U. S. Post Office.

September 20

Conn., Durham—SCHOOL—Abner B. Newton, chn. School Com., Memorial School Bldg., 3 story, 98x140 ft., brick, cinder block high school addn., auditorium-gymnasium shops, home economics commercial, health and administration rooms and classrooms, cafeteria, etc. $250,000. Schilling & Goldbecker, 405 Temple St., New Haven, archts. CD 1/5.

D. C., Wash.—SCHOOL—Dist. Comrs., District Bldg., Oxon Run School 4 St. and Mississippi Ave. S. E. Plans deposit $25. CD 7/12/44.

Ind., Frankfort—POWER PLANT—Bd. P. Wks., A. Rogers secy., City Hall, 1 story, bsmnt., 28x84 ft., brick, rein.-con., steel municipal power plant addn. $100,000. Plans deposit $10. Emery, Marker & Emery, 510 Toledo Trust Bldg., Toledo, O., consult. engrs. CD 5/26/48.

September 21

Que., Baie Comeau—POST OFFICE—J. M. Somerville, secy., c/o Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., post office. Approx. $250,000. Plans deposit $100. G. Brault, c/o owner, archt. CD 4/28.

September 22

†N. Y., New York—HOSPITAL—Pub. Bldgs. Admin., 731 Custom House, New York, Zone 4, repairs, etc. to U. S. Marine Hospital, 67 Hudson St.

Okla., Okemah—HOSPITAL—Clerk Okfuskee Co., Okemah, Okfuskee Co. Hospital. $275,000. Plans deposit $50. R. F. Ferguson, Ada, archt. CD 5/5.

September 23

Ga., Rome—DAIRY BARN—Georgia Dpt. Pub. Health, State Office Bldg., Atlanta, farm dairy barn at Battey State Hospital. Plans deposit $10. Doyle L. Harvey, West Bldg., Rome, archt.

Idaho, Moscow — CLASSROOM — University of Idaho, Moscow, first unit engineering classroom bldg. $600,000. H. Richardson, Lewiston, engr. CD 4/18/47.

September 28

Wash., Seattle — CONTROL, etc. — City County-City Bldg., control bldg., crane tower, yard walls, equip. foundations, duct runs, etc., for Broad St. Substation. Approx. $250,000. E. R. Hoffman, city light supt. CD 2/26/47.

LOW BIDDERS

Calif., Berkeley—OFFICE—California Farm Bureau Federation, 2223 Fulton St., Sept. 1, 3 story, rein.-con. office bldg. addn., from Barrett & Hilp, 918 Harrison St., San Francisco, **$341,245.** CD 8/17.

Calif., Long Beach—SCHOOL—City, Sept. 1, David Burchman School, from J. E. Burrell & Sons, 522 Shamrock Ave., **$265,100.** CD 8/19.

Calif., Richmond—GYMNASIUM—Richmond High School Dist., 1108 Bissell Ave., Sept. 2, rein.-con. gymnasium at Harry Ello Junior High School, from Indenco, 656 31 St., Oakland, **$357,874.** Dragon, Schmidts & Hardman, 1320 University Ave., Berkeley, archts.

Colo., Denver — SCHOOL — School Dist. 1, City and Denver Co., 414 14 St., general contract 2 story, L-shaped, 44x92 ft. and 85x129 ft. school, from E. L. Hobbs Constr. Co., 520 Acoma St., **$491,720.** CD 8/18.

†Florida—OFFICE, etc.—U. S. Eng., P. O. Box 1169, Mobile, 7, Ala., cancelled bids to have been opened Sept. 1, field construction office and laboratory at Jim Woodruff Dam near Chattahoochee, Serial No. CIVENG-01-076-40-2. CD 8/17.

Ind., Butlerville—POWER HOUSE—State of Indiana, P. Wks. & Supply Div., W. R. Mybeck, dir., 404 State House, Indianapolis, Sept. 1, 1 story, 31x88 ft. and 18x41 ft. power house addn., Muscatuck State School, from Rapp & Mundt, Columbus, **$74,009.** Est. $100,000. CD 8/11.

N. Y., Ithaca—LIBRARY, etc.—At office Bertram D. Tallamy, supt. P. Wks., State Office Bldg., Albany, cancelled bids to have been opened Sept. 7, general constr., heating, sanitary, electric and elevator work for Agricultural library and Classroom Bldg., etc. New York State College of Agriculture, Cornell University. CD 8/31.

N. C., Greensboro — HOME ECONOMICS — Womans College, University of North Carolina, Greensboro, home economics bldg., from Fowler-Jones Constr. Co., Reynolds Office Bldg., Winston-Salem, **$591,800.** Bids 8/26. CD 8/30, under LB.

Tex., Andrews—AGRICULTURE and LIVESTOCK—Andrews Co., Court House, Aug. 31, masonry, steel agriculture and livestock, storage, air-conditioning from Houston Hill, 307 S. Marienfeld St., Midland, **$94,993.** Est. $80,-00. CD 8/15.

Tex., Seminole—SCHOOL—Bd. Educ., Seminole Independent School Dist., Seminole, Aug. 31, masonry school, from Gilstrap Constr. Co., Box 283, Lubbock **$354,435.** Est. $275,000. CD 8/5.

CONTRACTS AWARDED

Calif., Pasadena — SCHOOL — City School Dist., 351 S. Hudson St., Hastings Ranch School, to V. O. Brunzell Co., 14709 La Salle Ave., Gardena, **$264,415.** Bids 7/7. CD 6/17.

Calif., Quincy — SCHOOL — Plumas County Unified School Dist., Quincy, 9 classroom frame Quincy Elementary School, to Younger & Hallsteen, 575 Mission St., San Francisco, **$252,870.** Bids 8/30. CD 8/11.

Conn., Bristol—SCHOOL—City, School Bldg. Com., Bristol, 16 room brick, steel school, Louisiana Ave., to Bonvicini Constr. Co., New Harwinton Rd., Torrington, **$585,000.** Bids 8/1. CD 8/9.

Conn., Danbury — HOUSES — City, Danbury Housing Auth., Danbury, 26 duplex and 10 single frame houses, Liberty Ave., to Frouge Constr. Co., Inc., 74 Goodsell St., Bridgeport, **$643,000.** Bids 8/29. CD 9/2, under LB.

La., Baton Rouge—CHEMISTRY—Louisiana State University Baton Rouge, chemistry bldg. addn., to Horace B. Rickey Inc., Lafayette, **$648,000.** A. Hays Town, Masonic Bldg., archt. CD 8/12.

La., Cameron — SCHOOL — Cameron Parish School Bd., Cameron, elementary and high school, to T. Miller & Sons, Lake Charles, **$285,445.**

Miss., Cleveland — SCIENCE — State Bldg. Comn., Jackson, science bldg., Delta State Teachers College, to Wright & Maugh Constr. Co., Leland, **$282,500.** Bids 8/30. CD 8/8.

Neb., Tecumseh — POWER PLANT — City, City Hall, power plant changes and diesel power equip., etc., to Cooper-Bessemer Co., Mt. Vernon, O., **$94,255.** Bids 8/3. CD 7/14.

Ore., Monmouth-Independence — SCHOOL — School Dist. 13-C Independence, 13 room rein.-con. school, midway between Monmouth and Independence, to E. E. Batterman, 147 N. Commercial St., Salem, **$253,214.** Est. $400,000. Bids 8/31.

Tex., Canyon — COLLEGE BLDG. — West Texas State Teachers College, Canyon, college bldg. to F. W. Jesse, Canyon, **$279,000.** CD 11/14/46.

Utah, Roosevelt—SCHOOL—Duchesne County School Bd., Duchesne, general contract Union High School, to Ralph Child, Springville, **$415,900.** Bids 8/24. CD 8/2.

Va., Arlington—SCHOOL—Arlington County School Bd., 2732 Wilson Blvd., cinderblock, brick facing 10-room elementary school at North Fairlington, 30 and N. Abingdon Sts. to M. Pomponio & Sons, Inc., 2228 Wilson Blvd., **$299,470.** Bids 8/30. Awarded 8/30. CD 8/17.

Alta., Fairview—SCHOOL—Province of Alberta, Edmonton, agriculture school, to Burns & Dutton Constr. Co. Ltd. 5440 First Ave., Calgary. **$556,888.** Bids 8/2. CD 7/29.

●**N. S., Halifax**—BARRACKS—Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., 3 story, bsmnt., rein.-con., steel, brick barracks bldg., H. M. C. S., Stadacona Naval Training Station, to E. G. M. Cape & Co. Ltd., 620 Cathcart St., Montreal, Que. Approx. **$1,600,000.** Bids 6/27. CD 6/13.

Que., Ormstown — HOSPITAL — Barrie Memorial Hospital Bd., Ormstown, W. H. McGerrigle, secy., hospital, to J. L. E. Price & Co. Ltd., 680 Sherbrooke St. W., Montreal. Approx. **$400,000.** E. J. Turcotte, Dominion Sq. Bldg., Montreal, archt. CD 8/10.

●**Que., St. Hubert**—HOUSING—Central Mortgage & Housing Corp., 1235 McGill College Ave., Montreal, 100 houses at Airport, D. N. D. Non-Urban, Proj. 1/49, to Fortin & Lamothe, 282 Marcel St., Ville St. Joseph, Drummondville, Approx. **$1,500,000.** Est. $700,000. CD 8/8.

Sask., Prince Albert—POST OFFICE—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., post office addns. and alterations, to Harvey Lunam Constr. Co., Regina, Approx. **$404,000.** CD 9/5/45.

COMMERCIAL BUILDINGS

BIDS ASKED

September 23

Ont., Toronto—HOSPITAL—Arthur Cohen, 105 King St. W., excavation and foundation for hospital, University Ave., for Mount Sinai Hospital Bd., 105 King St. W., Kaplan & Sprachman, 17 Davenport Rd., archts. CD 9/27/45.

September 27

●**Tex., San Antonio**—HOSPITAL—Baptist Memorial Hospital, Inc., 215 Camden St., Contr. 1 general contract 7 story, basmnt., masonry maternity hospital, $1,250,000, Plans deposit $50; Contr. 2, heating plant, steam pipe sys., $100,000; Contr. 3, air-conditioning sys., $85,000; Contr. 4, refrigeration plant, $75,000. Plans deposit $25 each. Bartlett Cocke, 3501 Broadway, archt. W. E. Simpson Co., Milam Bldg., structural engr. Halsey & Royer, Transit Tower, mech. engrs.

Bids Asked

●**Ill., Chicago**—HOUSING—Oakdale Sheridan Apartments, Inc., c/o Philip Maher, archt., 157 E. Erie St., 19 story, 58x187 ft. rein.-con. brick apartment bldg. garages, $2,400,000.

SOON LETS CONTRACT

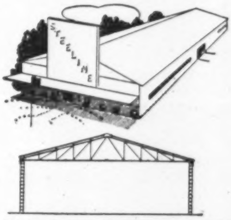
Colo. Longmont — MEMORIAL BLDG.—St. Vrain Memorial Building Assoc., Longmont, soon lets contract 2 story brick 125x200 ft. memorial bldg., incl. auditorium, and basketball floor, $280,000. J. Roger Musick, Colorado Bldg., Denver, archt. and engr. CD 8/15.

La., New Orleans—TRADE DEPARTMENT—Favrot & Reed, archts., Nola Bldg., soon lets contract 2 story, 50x90 ft. steel, masonry mfg. trade department bldg., Canal and Soloman Sts., for Singer Sewing Machine Co., 149 Broadway, New York, N. Y.

Minn., Minneapolis—BROTHERS HOME—De La Salle High School, 17 Grove St., Nicollet Island, soon lets contract 3 story, part bsmnt., masonry Brothers Home, $250,000. G. Shifflet, Backstrom & Assoc., 17 W. Franklin St., archts. CD 7/11.

Minn., Red Lake Falls—HOSPITAL—Sisters of St. Benedict, Mount St. Benedict, Mother M. Blandina, O.S.B., Crookston, soon lets contract 2 story, 54x166 ft. bsmnt., masonry hospital, 44x50 ft. wing, $380,000. S. T. De Remer, Grand Forks, N. D., archt. CD 1/19.

Mo., St. Louis—HOSPITAL—Josephine Heintkamp Memorial Hospital, 1640 S. Grand Blvd., Sisters of Charity of Incarnate Word, soon lets contract 4 story, 45x150 ft., and 50x80 ft. L-shaped brick, concrete, steel hospital addn., Grand Blvd. and Lafayette Ave. Approx. $750,000. Maguolo & Quick, 4908 Delmar Blvd., St. Louis, Zone 8, archts. CD 8/15.



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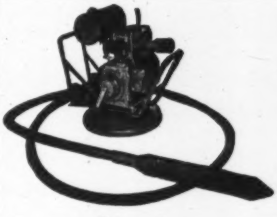

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N. M., Santa Fe—HOTEL—Atchison, Topeka & Santa Fe Ry. Co., T. A. Blair, ch. engr., Railway Exchange Bldg., 80 E. Jackson St., Chicago, Ill., soon lets contract 5 story 70 room and baths La Fonda Hotel addn. Approx $250,000. Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., engrs. and archts.

N. C., Wake Forest — HEADQUARTERS — Wake Electric Membership Corp., Wake Forest, soon lets contract, headquarters bldg. George F. Hackney & Charles P. Knott, Durham, archts.

Tenn., Clarksville — TELEPHONE EXCHANGE—Southern Bell Telephone Co., Hurt Bldg., Atlanta, Ga., soon lets contract dial and toll office bldg. Approx. $250,000.

Tex., Lufkin—EDUCATIONAL—First Baptist Church, Lufkin, soon lets contract 3 story educational bldg. $250,000. Gregory & Cates, 207 W. Erwin St., Tyler, archts. CD 5/15.

Ont., Kitchener — CHURCH—Barnett & Rieder, archts., 49 King St., 60x150 ft. concrete, steel, stone church, for Roman Catholic Parish of Ste. Anne, 268 Cameron St.

Ont., Kitchener — OFFICE — Mathers & Holdenby, archts., 15 St. Mary St., Toronto, soon lets contract 3 story, 65x143 ft., masonry, rein.-con. office, for Mutual Life Insurance Co., 20 Queen St. W. Approx. $550,000.

Sask., Balcarres—HOSPITAL—Secy., Union Hospital Bd., Balcarres, soon lets contract hospital, H. K. Black, Regina, archt.

LOW BIDDERS

Fla., St. Petersburg—APARTMENT DEVELOPMENT—Joyce Apartments c/o low bidder, appartment development, from Mills & Jones, 2260 4 Ave. S. **$492,489.**

Okla., Enid — CHURCH — University Place Church, Enid, Aug. 1, church auditorium and educational bldg., from D. C. Bass & Sons, Bass Bldg., **$260,000.** Est. $250,000. CD 7/27.

CONTRACTS AWARDED

Ala., Birmingham — HOMES — American Family Homes, Inc., c/o contractor, 79 homes, to L. B. Cooper, 617 S. 2 Ave., Approx. **$255,000.**

Ala., Dothan — CHURCH — Foster Street Methodist Church, c/o contractor, church, to Chapman Constr. Co., Dothan, Approx. **$250,000.** Bids 8/30. CD 8/5.

Ala., Florence—APARTMENT UNITS—Dee-Leland Co., c/o Miller, Martin & Lewis, archt., Title Guarantee Bldg., Birmingham, 60 apartments units, to Valley Building Co., c/o Southeastern Mfg. Co., Tuscaloosa, Approx **$300,000.**

Ala., Shawmut — RESEARCH — West Point Mfg. Co., Shawmut, research bldg., to Batson-Cook Co., West Point, Ga., Approx. **$250,000.**

Calif., Concord — RESIDENCES —Goforth & McGah 247 Gregory Lane, 48 residences in Gregory Estates, Pleasant Hill, to D. L. Goforth, 1010 Tennessee St., Vallejo, Approx. **$315,000.**

Calif., Oakland — RESIDENCES — Hergan, Inc., 3525 MacArthur Blvd., 51 residences in Gregory Gardens, Pleasant Hill, to Phil Heraty, 3525 MacArthur Blvd., Approx. **$330,000.**

Calif., Paramount — DWELLINGS — Ed. Krist, 900 S. Long Beach Blvd., Compton, 50 frame, stucco dwellings and garages, Obispo, Jetmore, Wiemer Sts. Owner builds. **$265,000.**

Calif., Sacramento — RESIDENCES — Jere Strizek, Town & Country Village, 135 residences in La Villita Tract and Fredericksonville Tract. Owner builds. **$780,000.**

Conn., Higganum — TELEPHONE EXCHANGE—Southern New England Telephone Co., 227 Church St., New Haven, 1 story, wing brick, concrete telephone exchange, dial equip installation, to S. C. Poriss & Co., 54 Church St., Hartford, Approx. **$250,000.** Bids 8/22. CD 8/17.

Fla., Jacksonville — HOMES — Walter H. Crabtree Co., Barnett Bldg., Zone 1, 20 family unit homes, in Lakewood Subdivision. Owner Builds. Approx. **$250,000.**

Fla., Jacksonville — HOUSING — Mayfair Village Corp., 3720 Beach Blvd., Zone 7, 109 family unit housing, to George D. Auchter Co., foot of E. 56 St., Zone 1, **$385,000.** Bernard W. Close, 118 E. Bay St., Zone 2, archt.

Fla., Jacksonville — HOUSING — Odessa Manor Corp., Adams Rd. and Edgewood Ave., Zone 4, 43 low cost family units in Odessa Manor on Adams Rd. Owner builds. **$269,500.**

●**Ga., Atlanta**—HOMES—Ed Tucker Memorial Homes, c/o S. Walton Peabody, archt., 530 N. McDonough St., Decatur, 200 homes. Owner builds. Approx. **$1,000,000.**

Ill., Chicago — HOUSING — Missner Constr. Co., 2940 N. Campbell St., Zone 18, 5 story, rein.-con., brick apartments, Rockwell and Balmoral Sts. Owner builds. Approx. **$400,000.** Loewenberg & Loewenberg, 111 W. Monroe St., Zone 3, archts.

Ill., Chicago — CHURCH — St. Constantine Helenic Orthodox Church, Stony Island and 74 St., 1 and 2 story, bsmnt., 150x235 ft. rein.-con. brick church, to Rymont Corp., 228 N. LaSalle St., Chicago, Zone 1, **$850,000.** Christopher J. Chamales, 11 S. LaSalle St., Zone 3, archt. J. K. Johnson, 520 N. Michigan St., structural engr. Awarded 8/12. CD 7/11.

Ind., Indianapolis—OFFICE—Empire Life & Accident Co., 215 E. New York St., 2 and 3 story, 120x180 ft. stone brick, rein.-con. steel office, 28 and Meridian Sts., to Carl Geupel Contr. Co., 1109 Hume-Mansur Bldg., Approx. **$750,000.** Awarded 8/30. CD 4/14/48.

La., Shreveport — HOUSING — Linwood Development Corp., W. 74 St., several residential developments. Owner builds. Approx. **$250,000.**

Md., Baltimore—HOUSING—Property Sales Co., 900 Court Sq. Bldg., one hundred seventy-five 2 story, 12x26x29 ft. brick dwellings, 5533-49 Midwood Ave., 5500-34 Beavergard Ave., 100-90 Turnbridge Rd., 100-1098½ and 1001-1083 Cameron Rd., separate contracts, **$694,600.** Kenneth C. Miller, 2203 N Charles St., archt.

Miss., Jackson — APARTMENTS — Jackson Apartments, Inc. c/o contractor, apartment development, to McNeese Constr. Co., Commerce Title Bldg., Memphis, Tenn., Approx. **$500,000.**

Mo., Clayton (St. Louis, Zone 5, P. O.) — MARKET—Bettendorfs Markets, c/o Hampton Village Market, Inc., Joseph Bettendorf, Hampton Ave at Chippewa St., St. Louis, Zone 9, 1 story, part bsmnt., brick, concrete, market, Clayton and Hanley Rds., to Dickie Constr. Co., 520 Louderman Bldg., 317 N. 11 St., St. Louis, Zone 1. Approx. **$250,000.** CD 12/4/47.

Mo., Clayton (St. Louis, Zone 5, P. O.) — STORE and OFFICE—Clayton Plaza Corp., Sidney M. Studt, pres., 5 Forsyth Walk, Clayton, St. Louis, Zone 5, 3 story, bsmnt., 76x159 ft. brick, concrete, steel store and office, Forsyth and Brentwood Blvds., separate contracts. CD 9/6.

N. J., Ashland—RESIDENTIAL DEVELOPMENT—C. J. Smith, Inc., 12 Haddon Ave., Camden, 100 residential development, Burnt Mill Rd., separate contracts, **$650,000.** Dante D'Anastasio, 1815 Federal St., Camden, archt.

●**N. Y., Bellaire**—APARTMENT—Alley Pond Park Apartments, c/o Arthur Weiser, archt., 20 E. 52 St., New York, Zone 22, apartment in area bounded by Cloverdale Blvd., Kingsbury Ave., 229 and 230 Sts., Owner builds. **$5,000,000.** CD 5/13.

●**N. Y., Laurelton** — APARTMENTS — Prauer & Sons, c/o Benjamin Braunstein, archt., 163-18 Jamaica Ave., Jamaica, garden apartments for 384 families on 21 acre site bounded by Belt Parkway, Merrick Rd., 234 St., 131 and 133 Aves. Owner builds. **$3,500,000.**

●**N. Y., New York** — APARTMENT — 135 East 54 St. Corp., c/o Rosario Candela & Paul Reznick, archts., 654 Madison Ave., 16 story apartment, 54 St. and Lexington Ave. Owner builds. **$3,000,000.**

N. Y., Riverhead—HOSPITAL—Riverhead Hospital, 732 E. Main St., hospital, to Harold R. Reeve & Sons, Mattituck, N. Y., **$650,000.** Bids 7/22. CD 7/13.

O., Cincinnati — RESIDENCES — Wolf-Schwartz, 7316 Irwin Ave., twenty 2 story brick, 24x26 ft. residences, concrete bsmnt., separate contracts. **$300,000.** Leslie Moss, 1210 Drott St., archt.

Pa., Downingtown — APARTMENT DEVELOPMENT—T. Vinton Smedley, & George Aumiller, Downingtown, residential development Grant Ave., etc., separate contracts. **$250,000.** Malcolm Pownall, Coatesville, archt.

Pa., Lower Makefield Twp. (Morrisville P. O.)—RESIDENTIAL DEVELOPMENT—Penn Valley Constructors, 20 N. Penna Ave., Morrisville, residential development, Green Ridge and Oxford Rds., separate contracts, **$300,000.**

Pa., Phila. — RESIDENTIAL DEVELOPMENT—Castor Highlands Development Corp., Ellet and Cherokee Sts., residential development Ellet St. and Glen Echo Rd., separate contracts, **$320,000.** Lewis J. Cowan, 1505 Pine St., Phila., archt.

Pa., Phila.—APARTMENT DEVELOPMENT —Princeton Gardens, Inc., c/o Fidelity Bond & Mortgage Co., Lincoln Liberty Bldg., apartment development, in 7300 block Germantown Ave., to Frank Glassman, 5046 Rorer St., **$250,000.** Aaron Colish, 117 S 17 St., archt.

Pa., Pittsburgh — APARTMENTS—South Aiken Apartments, Inc., 4066 Liberty Ave., 3 story bsmnt., 35 suites brick and block apartment, 545 S. Aiken St. Owner builds. **$250,000.** CD 8/8.

Pa., Quakertown — RESIDENTIAL DEVELOPMENT — Walter Hickey, R. F. D. No. 3, residential development, Doylestown Rd., etc., separate contracts, **$250,000.**

Pa., Ross Twp. (near Pittsburgh)—APARTMENT—Perry Norman Corp., 203 Jackson Circle, West View, Pittsburgh, 3 story bsmnt., 21 suite brick and block apartment, Perry Hy. Owner builds. **$250,000.** Clarence Blezard, 901 Ridge Ave., Pittsburgh, archt.

S. C., Abbeville — RESIDENCES—Abbeville Homes, Inc., 88 Broad St., Charleston, 50 residences, to Construction Service Co., 10 Court House Square, Charleston, **$325,000.** Awarded 8/31.

S. C., Mount Pleasant — RESIDENCES — Mount Pleasant Homes, Inc., 88 Broad St., 25 residences, near here, to Construction Service Co., 10 Court House Square, Charleston, **$400,000.** Awarded 8/31.

Tenn., Knoxville — APARTMENT UNITS — Taliwa Apartment Corp., c/o Jerome G. Taylor, pres., 55 addnl. apartment units. Owner builds. **$400,000.**

Tex., Corpus Christi—HOUSING—Buccaneer Gardens, Inc., 518 N. Walter St., group housing, bordered by Staples and Minnesota Sts., to Adams & Baker, c/o owner, Approx. **$325,000.** CD 8/4.

Tex., Corpus Christi—HOUSING—Robinson & McCall, 401 N. Staples St., 51 dwellings, Owner builds. Approx. **$315,000.** CD 9/2.

Tex., Corpus Christi — HOUSING — N. O. Simmons, 705 Raalston Ave., 44 houses, Owner builds. **$250,000.** CD 8/29.

Tex., Dallas — HOUSING — W. H. Cothrum & Co., 2116 N. Field St., addnl. negro housing on 22-acre site between Hatcher St. and Belt Line. Owner builds. **$375,000.**

Tex., Galveston — DWELLINGS — W. R. Reid & T. A. Robinson, 4002 Timon Blvd., Corpus Christi, 83 dwellings, south end of North Flats. Owner builds. **$492,000.** Reynolds & McCleary, 3401 N. Shepherd St., Houston, archts. CD 8/19.

Tex., Houston—HOUSING—H. & D. Constr. Co., 527 N. Adams St., addnl. housing proj. in Santa Rosa Addn. Owner builds. Approx. **$250,000.** CD 8/19.

Tex., Houston — COMMUNITY CENTER — Manuel Rudy, 2818 Canal St., community center, to J. W. Williams Co., 2818 Canal St., Approx. **$260,000.** CD 7/15/48.

Tex., Houston—RESIDENCES—Southcrest, Inc., 4151 Lanark Lane; 100 addnl. residences, Crestmont and Southridge Sts., to Satterwhite Constr. Co., 5151 Lanark Lane, Approx. **$650,000.** CD 9/6.

Tex., Houston — HOUSING — Alex Susholtz, 1334 Subarnett St., 19 duplex houses, Owner builds. **$285,000.** CD 9/6.

Tex., Houston — HOUSING — Alex Susholtz & Assoc., 1087 W. 41 St., frame, cedar shake duplex housing, Wakefield St. Owner builds. Approx. **$275,000.** Woestemeyer & Gaffney, 2351 Claremont Lane, archts. CD 8/25.

Tex., Houston—DWELLINGS—Lee G. Wiley & Co., 1511 Eagle St., 21 dwellings, in Galena Pines. Owner builds. Approx. **$265,000.** CD 8/19

Tex., Pasadena — DWELLINGS — Charles R. Olds & Assoc., 3425 University St., 75 dwellings. Owner builds. **$325,000.** CD 4/8.

Tex., Port Arthur — APARTMENT — G. L. Christian, 1909 San Jancinto St., Houston, 30 apartment and duplexes across street from St. Marys Hospital. Owner builds. **$250,000.**

INDUSTRIAL BUILDINGS

BIDS ASKED

September 19

N. J., Vineland—WAREHOUSE—Kimbel Glass Division, Owens Illinois Glass Co., 405 Madison Ave., Toledo, O., Warehouse 32. $150,000. W. W. Weullner, c/o owner, archt.

September 20

Wis., Watertown—BOILER PLANT—Northwestern College, Watertown, boiler plant, gymnasium addn., chimney. Plans deposit $15. Toltz, King & Day, Inc., 1509 Pioneer Bldg., St. Paul, Minn., archt.

September 21

Miss., Bay St. Louis—WAREHOUSE, etc.—Coast Electric Power Assn., Bay St. Louis, warehouse and office, $90,000. Biggs, Weir & Chandler, 224 N. Congress St., Jackson, archts.

September 26

Que., Greenfield Park—FACTORY—T. Pringle & Son Ltd., 485 McGill St., Montreal, 1 story, bsmnt., 117x132 ft., rein.-con. factory, for Belding Corticelli Ltd., 1455 Shearer St., Montreal. E. C. Miller, 485 McGill St., Montreal, archt.

Bids Asked

Ill., Chicago—WHOLESALE GROCERY—High Low Foods Co., 30 W. 87 St., Zone 20, 1 story, brick, stone, steel wholesale grocery, $300,000. Shants & Pechota, 25 E. Jackson St., Zone 14, archts.

SOON LETS CONTRACT

Calif., Millbrae—MARKET—Bouskos Bros., c/o Bliss & Hurt and Trudell & Berger, archts., 717 Market St., San Francisco, soon lets contract 1 story, mezzanine, 180 ft. square, concrete, steel truss market, $300,000. CD 8/31.

Calif., North Sacramento—CONTROL, etc. Pacific Gas & Electric Co., 245 Market St., San Francisco, soon lets contract control bldg. and switchyard foundations at Allison Substation. Approx. $68,000.

Conn., Fairfield — WAREHOUSE — Jenkins Brothers, H. J. Barnsley, vice-pres., 510 Main St., Bridgeport, soon lets contract 1 story, 85x220 ft. masonry warehouse, Black-Rock Turnpike and Timko St. Approx. $68,000. Fletcher Thompson, Inc., 211 State St., Bridgeport, archt.

La., DeRidder—WAREHOUSE, etc.—Beauregard Electric Co-operative, DeRidder, warehouse and office, Plans deposit $25. George C. Hengy & Co., 1007½ Texas Ave., Shreveport, engrs. CD 8/10.

N. C., Goldsboro—PLANT—Carbide & Carbon Chemical Co., 30 E. 42 St., New York, Zone 17, N. Y., soon lets contract pyrofax plant.

Pa., Springfield—LABORATORY—Owner, c/o Sydney E. Martin, archt., 117 S. 17 St., Phila., soon lets contract laboratory, for Bartol Research Foundation, The Franklin Institute, 20 St. and Parkway, Phila., $125,000.

Tex., Fort Worth—SHOP—Beard & Stone Electric Co., c/o Wilson & Patterson, archts., Majestic Bldg., soon lets contract generator service shop, $165,000. CD 8/26.

Tex., Houston—GARAGE AND SHOP—Continental Bus Center, Inc., 300 Travis St., soon lets contract masonry repair garage and shop, Bagby and Texas Sts. $175,000. Hucker & Jones, Amarillo, archts. CD 8/8.

Que., Montreal—FACTORY—Luke & Little, archts., 1410 Guy St., soon lets contract 1 story, 225x209 ft. rein.-con. steel, brick factory, for McArthur Chemical Co. Ltd., 20 St. Paul St.

LOW BIDDERS

Minn., Melrose — GARAGE, etc. — Stearns Electric Assn., Melrose, Aug. 31, 1 story garage and office from M. Worms & Son, New Munich, **$76,219.** CD 8/17.

Tex., Longview — FREIGHT STATION — Texas & Pacific Railway Co., R. J. Gammie, ch. engr., Texas and Pacific Bldg., Dallas, Zone 2, Aug. 17, freight station and wash and locker rooms, from J. Sam Owens, Longview, **$266,000.** Wyatt C. Hedrick, 1005 First National Bank Bldg., Fort Worth, archt.

Tex., Waco — PLANT — News - Tribune & Times-Herald, 215 S. 6 St., Aug. 31, 2 story newspaper plant, from Moore Constr. Co., Box 310, Austin, **$357,992.** Est. $125,000. CD 8/22.

CONTRACTS AWARDED

Ark., Little Rock — WAREHOUSE, etc. — O'Brannon Brothers, c/o Harry Wanger, archt., Pyramid Bldg., warehouse and office, to L. H. Knight, c/o archt. Approx. **$100,000.**

Calif., South San Francisco—WAREHOUSE—E. I. duPont de Nemours & Co., duPont Bldg., Wilmington, Del., warehouse alterations, to Cahill Bros., 206 Sansome St., San Francisco, Approx. **$70,000.** CD 7/22.

Conn., Derby—BUS TERMINAL—Connecticut R. & L. Co., 55 Congress St., Bridgeport, 1 story, brick, steel conder blocks bus terminal Main St., to Vuono Constr. Co., 217 Bedford St., Stamford. Approx. **$100,000.** CD 9/2.

Del., North Claymont (Claymont P. O.)—PLANT ADDN.—General Chemical Co., 40 Rector St., New York, N. Y., mfg. plant addn., to Thomas Earle & Sons, Land Title Bldg., Phila., Pa., over **$68,000.** Bids 7/31. CD 7/26.

Fla., Jacksonville—WAREHOUSE, etc.—Florida Ice Machine Co., corner Park and Forest St., Zone 4, 15x250 ft. warehouse and cold storage plant, Dennis St. at Seaboard R. R. to E. C. Kenyon Constr. Co., 4276 Verona Ave., Zone 7, **$130,000.** Awarded 9/1.

Fla., Tampa—PLANT—Dixie Lilly Milling Co., Tallahassee, milling plant. Owner builds. **$250,000.**

Ill., Chicago—GRAIN ELEVATOR—Cargill, Inc., 200 Grain Exchange, Minneapolis, Minn., design and construction grain elevator addn., 11901 S. Torrence Ave., Zone 17, to Blaw-Knox Constr. Co., 321 Penn Ave., Pittsburgh, Pa. Approx. **$300,000.**

Ill., Chicago — MILL — Container Corp. of America, 404 E. North Water St., Zone 11, paper mill addns., 56 and E. North Water St., Zone 11, to Ragner Benson Inc., 4744 W. Rice St., Zone 29, **$70,000.** E. J. Stankiewicz, 140 S. Dearborn St., Zone 3, archt.

Ill., Chicago—PLANT—Felt Products Mfg. Co., 1508 W. Carroll St., Zone 7, steel, brick, concrete plant addn., to Hoffberg & Co., 220 W. Locust St., Zone 10, **$68,000.** Rosen & Horowitz, 53 W. Jackson St., Zone 4, archts.

Ill., Chicago—FACTORY—S. & C. Electric Co., 6536 Ridge Ave., Zone 26, brick, steel factory, to Algot B. Larson, Inc., 3837 W. Lake St., Zone 24, **$130,000.** Awarded 8/30. CD 8/25.

Kan., Topeka — SALES and SERVICE — Craven Farm Equipment, Co., 229 Jackson St., farm equip sales and services bldg., to Hahn Contg. Co., RFD 5. Approx. **$68,000.**

Minn., St. Paul—WAREHOUSE, etc.—Aldine Properties Inc., 1528 4 St. S. E., Minneapolis, general contract 1 story, 80 x 180 ft., concrete blocks, brick, steel, masonry warehouse and office, 595 Aldine St., to C. M. Kurup, 1528 4 St. S. E., Minneapolis, **$140,000.** W. F. MacGregor & Assoc., 1108 Nicollet Ave., Minneapolis, archts.

Mo., St. Louis—FACTORY—General Cable Corp., 4121 N. Kingshighway, St. Louis, Zone 15, 1 story, 300x560 ft. brick, concrete, steel factory alterations, imprvs. to H. B. Deal & Co., Inc., 5517 Manchester Ave., Zone 10. Approx. **$220,000.**

Mo., St. Louis—WAREHOUSE—Mallinckrodt Chemical Works, 3600 N. 2 St., Zone 7, 1 story, 83x123 ft. brick, rein.-con. waterhouse for chemical plant, 64 Destrehan St., to Dickie Constr. Co., 520 Louderman Bldg. 317 N. 11 St., Zone 1. Approx. **$70,000.** John R. Nichols & Paul A. Norton, 825 Columbus Circle, Boston, Mass.

Mo., St. Louis—WAREHOUSE—Hyman Rubin, 3224 N. 2 St., Zone 7, 1 story, 40x148 ft. steel warehouse, 7302 Bulwer Ave., to Juengel Constr. Co., 201 Worthington Bldg., Affton, St. Louis, Zone 23, Great Lake Steel Co., Tecumseh Rd., Detroit, Mich., archt.

●**N. J., Weehawken**—PLANT—Neo-Gravure Corp., 601 W. 26 St., New York, N. Y., part 1 and part 2 story, 315 x 425 ft. brick, steel plant, Hudson County Blvd. East at intersection Park and Wilson Avenues, near mouth of Lincoln Tunnel, to Turner Constr. Co., 420 Lexington Ave., New York, 17, N. Y., **$2,000,000.** CD 12/20.

Okla., El Reno — GRAIN ELEVATOR — Schroeder-Smith Grain Co., El Reno, grain elevator, to Johnson-Sampson Co., Salina, Kan., **$150,000.** Horner & Wyatt, Dwight Bldg., Kansas City, Mo., engrs.

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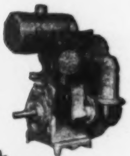

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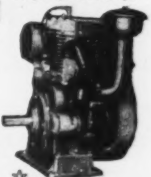

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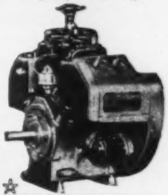

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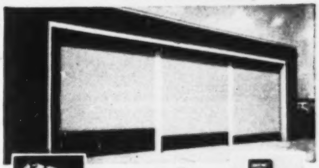

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Pa., Bethayers — FOUNDRY, etc. — H. W. Butterworth & Sons Co., 2417 E. York St., Phila., foundry, machine shop and storage bldgs. addns., to John R. Erbe, 2548 N. Farihill St., Phila., over **$250,000.** Harry Parker, 1200 Locust St., Phila., Pa., archt.

Pa., Phila.—FACTORY—Globe Solvents Co., 7 and Fishers Ave., factory, to Keystone Constr. Co., 1239 Unruh St., Approx. **$150,000.** Bids 6/29. CD 6/28.

Pa., Phila. — WAREHOUSE—Pennsylvania R. R. Co., L. P. Struble, ch. engr. (Eastern Region) Broad St. Station Bldg., 1617 Pennsylvania Blvd., Zone 4, 1 story, 50x275 ft., concrete, brick equipment warehouse, to Murphy Quigley & Co., 1518 Locust St., **$200,000.** CD 6/17.

R. I., Narragansett—PLANT—Dehydrating Process Co. of Boston, c/o John Ryan, 10 High St., Boston, Mass., concrete and cinder block fish dehydrating plant, Gallilee St. to Arthur N. Olive, 89 Broad St., Boston, Mass., Approx. **$250,000.**

Tex., Houston—SHOP—Reed Roller Bit Co., 5125 Clinton Dr., (Ceco Div.), machine shop addn., to Schneider Constr. Co., 3004 W. Dallas St. Approx. **$165,000.** Lockwood & Andrews, Union National Bank Bldg., engrs.

Tex., Kilgore — SERVICE SHOP — Center Chevrolet Co., Kilgore, auto service shop, display, storage. Own forces. **$120,000.** CD 4/1.

Tex., Port Arthur—PLANT—Grant Packing Co., Port Arthur, reconstructing meat packing and products plant. Owner builds. Approx. **$75,000.**

Tex., Port Arthur — SUB-STATION — Gulf States Utilities Co., Port Arthur, transformer sub-station. Owner builds. Approx. **$100,000.** CD 9/6.

Tex., Sweetwater — REFINERY — Gulf Oil Co., Sweetwater, refinery expans. Own forces. **$275,000.** CD 4/26.

Tex., Tyler—PLANT—A. F. Thompson Mfg. Co., Tyler heater mfg. plant expansion. Owner builds, **$145,000.** CD 9/2.

Wash., Seattle — BAKERY — Continental Baking Co., 18 Ave. S. and Jackson St., 1 story, 108x160 ft., rein.-con. addn., to Poston Constr. Co., 1620 13 Ave., Approx. **$68,000.** Bids 8/23. CD 8/15.

Wash., Tumwater — CELLAR — Olympia Brewing Co., Tumwater, steel, frame, rein.-con. beer cellar, to J. C. Boesplug Constr. Co., 1912 4 Ave. S., Seattle. Approx. **$70,000.** R. H. Wohleb, J. H. Wohleb and G. S. Bennett, Assoc., Chambers Block, Olympia, archts.

Wis., Green Bay—WAREHOUSE—C. S. Mc Dônald Co., 1400 Main St., 1 story, 101x236 ft., steel, concrete blocks warehouse, concrete fdn. and floor. Owner builds. **$95,000.**

Wis., Milwaukee—WAREHOUSE, etc.—International Trading Co., 229 E. Wisconsin Ave., Zone 2, 1 story, 128x227 ft., steel, brick, warehouse and office, concrete fdn. and floor, to Cream City Constr. Co., 229 E. Wisconsin Ave., Zone 2. Approx. **$100,000.** CD 8/5

Wis., Milwaukee—WAREHOUSE, etc.—F. Rose Realty Co., c/o Mendel Glickman, archt. and engr. 3612 W. Center St., Zone 10, 1 story, 123x294 ft., steel, brick warehouse and office, concrete fdn. and floor, to A. A. Peters Co., 2460 N. Humboldt Ave., Zone 12. Approx. **$155,000.**

Wis., Random Lake—GRAIN ELEVATOR, etc.—Random Lake Co-operative Assn., Random Lake, 1 story, 44x120 ft., 44x85 ft. wing, 75 ft. high, concrete, steel grain elevator and feed plant, to J. M. Babcock, 145 Eau Claire Blvd., Wausau, **$125,000.**

Alta., Edmonton — WAREHOUSE, etc. — Crane, Ltd., Jasper Ave., and 109 St., warehouse and office, to Poole Constr. Co. Ltd., 218 Tegler Bldg. Approx. **$500,000.** CD 8/4.

UNCLASSIFIED

BIDS ASKED

September 21

N. S., Inverness—PIER—Secy., c/o Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., pier reconstruction. Approox. $50,000. Plans deposit $10. R. Blais, c/o owner, engr.

Ont., Fort Williams—WHARF—J. M. Somerville, secy., c/o Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf. Approx. $50,000. Plans deposit $10. R. Blais., c/o owner, engr.

Ont., Port Bruce — PIER — Secy., c/o Dpt. P. Wks., Hunter Bldg., Ottawa, pier reconstruction. Approx. $65,000. Plans deposit $10. R. Blais, c/o owner, engr.

September 26

N. J., Newark—SPRINKLER PIPING SYSTEM—At office Chief Engineer, Port of New York Authority, 111 Eighth Ave., New York, 11, N. Y., sprinkler piping sys. in Seaboard Building 2 at Port Newark, Contr. PN-27. Plans deposit $10.

September 27

N. Y., New York—PLAYGROUND, etc.—Comr. Parks, at office Dpt. Parks, 64 St. and 5 Ave., Zone 21, constructing Wollman Memorial Playground and ice skating rink, Central Park, Contr. No. M-10-144; refrigerating rink, Contr. M-10-244; electrical work, Contr. M-10-344; plumbing, Contr. M-10-444; heating and ventilating, Contr. M-10-544. Plans deposit $5. CD 5/21/45.

Bids Asked

●**Tex., Navasota** — TRANSMISSION LINE — Gulf State Utilities Co., Beaumont, 132,000 volt 85-mile electric transmission line, between Navasota and Dayton, $2,600,000. CD 6/30.

SOON LETS CONTRACT

●**Tex., Houston**—FIELD HOUSE, etc.—Rice Institute, M. Esperson Bldg., soon lets contract field house, gymnasium and rein.-con. swimming pool, $3,000,000. Staub & Rather, 500 Stuart St., archts. CD 11/22/46.

LOW BIDDERS

California — ELECTRIC DISTRIBUTION SYSTEM—State Div. Architecture, P. Wks. Bldg., Sacramento, rejected bids Aug. 23, electric distr. sys. sports field floodlighting, etc., for 24th District Agricultural Assn., L. B. **$82,800.** CD 8/31, under LB.

Calif., Los Angeles—PARK BLDG.—Bd. Supervs. Los Angeles Co. 501 Hall of Records, Aug. 30, Plummer Park Bldg., from Paul W. Speer, 4201 Sunset Blvd., Los Angeles. **$160,800.** Est. $135,000. CD 8/8.

Colo., Denver—TENNIS COURTS—City and County of Denver, City & County Bldg., general contract 6 tennis courts and three tennis courts, at Barnum, Highland, Berkely, Sloans Lake, Washington and Lincoln Parks, from Berglund-Cherne Co., 364 Eudora St., Denver, **$66,800.** Est. over $50,000.

Conn., New Haven—BATHING PAVILION—City Park Dpt., Hall of Records, New Haven, Aug. 30, 100x300 ft., brick, concrete bathing pavilion, Lighthouse Point, from Fusco-Amatruda Co., 59 Amity Rd., New Haven, **$259,500.** CD 8/17.

Illinois—RURAL DISTRIBUTION LINES—M. J. M. Electric Co-operative, Inc., Carlinville, Sept. 1, 111.45 mi. rural distr. lines, incl. 66 mi. single-phase line and tie line, approx. 46 mi. rehabilitation and conversion feeders in Jersey, Macoupin and Montgomery Counties, Proj. Ill., 40 NR Macoupin, from Townsend Electric Co., 112 Johnson St., Jackson, Tenn., **$220,799.** CD 8/24.

Indiana—RURAL DISTRIBUTION LINES—Jasper Co. Rural Electric Membership Corp., Rensselaer, Aug. 23, 76.1 mi. rural distr. lines, removal 30.3 mi. Jasper, Pulaski, Starke and Porter Counties, Proj. Indiana 35G, Jasper, from Willard DeLong, Gerard, Ill., **$129,699.** CD 8/9.

La., Denham Springs—GAS SYSTEM—Town, Aug. 29, natural gas sys., from Carruth Pipe Line Corp., Louisiana National Bank Bldg., Baton Rouge, **$98,662.** CD 8/18.

Missouri and Iowa — RURAL DISTRIBUTION LINES—Atchison-Holt Electric Co-operative, John Buck, pres., Rockport, Mo., Aug., 24, 40.5 mi. rural distr. lines, Atchison, Holt and Nodaway Counties, Mo., and Page Co., Ia., Proj. Missouri 32 P, Atchison, from T. J. Robertson Co., Jonesboro, Ark., **$167,056.** CD 8/12.

Missouri and Iowa — RURAL DISTRIBUTION LINES—Atchison Holt Electric Co-operative, Rockport, Mo., Aug. 25, 394 mi. rural distr. lines, Atchison, Holt and Nodaway Counties, Mo. and Page and Fremont Counties, Ia., from Walco Eng. & Constr. Co., 2408 E. 4 Pl., Tulsa, Okla., **$498,066.** CD 8/11.

Missouri—RURAL DISTRIBUTION LINES—Boone Electric Co-operative, R. J. Martin, mgr., 3 N. 7 St., Columbia, Aug. 24, 246.14 mi. rural distr. lines, 41 mi. conversions, Audrain, Boone, Callaway and Randolph Counties, from Hufford & Kyger, 1810 E. 47 St. Terrace, Kansas City, Mo., **$330,298.** CD 8/23.

Montana—RURAL DISTRIBUTION LINES—Fergus Electric Co-operative, Lewistown, 73 mi. rural distr. lines, Fergus Co., from Line Builders Inc., Billings, **$71,709.**

North Dakota — RURAL DISTRIBUTION LINES—Baker Electric Co-operative, Cando, Aug. 25, 351 mi. rural distr. lines, Benson, Pierce and Wells Counties, from Center Constr. Co., Center, **$333,733.** CD 8/9.

CONTRACTS AWARDED

✦**Arizona and Nevada**—TRANSFORMERS, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., transformers, lighting arresters for Wellton-Mohawk Pumping Plants 1, 2 and 3, Gila and Davis Projs., Spec. R3-PX-13 (Region 3), to Westinghouse Electric Corp., Luhrs Bldg., Phoenix, Ariz., **$103,448.** Bids 7/13, awarded 8/25. CD 6/30.

Illinois—RURAL DISTRIBUTION LINES—Tri-County Electric Co-operative, Inc., C. Glenn Jones, pres., 1106 Main St., Mount Vernon, 99.44 mi. 7.2 KV distr. lines, 9 mi. 34.5 KV transmission lines, Jefferson and Marion Counties, Proj. Illinois 41 H & L, Jefferson to Oilfield Electric Co., P. O. Box 371, Carmi, **$163,840.** Bids 7/29. CD 7/12.

Iowa — RURAL DISTRIBUTION LINES—Southern Iowa Electric Co-operative, Inc., Bloomfield, 341 mi. rural distr. line, Davis Co., to Hook Constr. Co., 621 63 St., Des Moines, labor $105,987, materials $341,000, Total **$446,987.** Stanley Engrg. Co., Muscatine, engr.

Louisiana—RURAL DISTRIBUTION LINES—Concordia Electric Co-operative, Ferriday, 154.56 mi. rural distr. lines Concordia Parish, to R. D. Cooper Constr. Co., Ferriday, **$167,626.** Bids 6/20. CD 6/14.

Louisiana—RURAL DISTRIBUTION LINES—Valley Electric Membership Co-operative, Inc., Natchitoches, 179.17 mi. rural distr. lines, Grant Parish, to R. D. Cooper Constr. Co., P. O. Box 1763, Baton Rouge, **$184,116.** CD 7/9/48.

Mississippi — RURAL DISTRIBUTION LINES—Central Electric Power Assn., Carthage, 26.85 mi. rural distr. lines sys. imprvs., Leake Co., to Williams H. Alsup & Assoc., Barnett-Madden Bldg., Jackson, **$134,508.** CD 7/28.

Mississippi — RURAL DISTRIBUTION LINES—East Mississippi Electric Power Assn., Meridian, 196.27 mi. rural distr. lines, sys. imprvs., Clarke and Lauderdale Counties, to Irby Constr. Co., 817 S. State St., Jackson, **$253,801.** CD 7/28.

Mississippi — RURAL DISTRIBUTION LINES—Southwest Mississippi Electric Power Assn., Larman, 290 mi. rural distr. lines, Copiah Co., to Crews & Ward Constr. Co., Columbia, **$300,180.** CD 6/30.

Nebraska — RURAL DISTRIBUTION LINES—Eastern Nebraska Public Power Dist., Syracuse, Neb., 202.75 mi. rural distr. lines, Eastern Co., to Davidson & Ford Co., 3425 S. 60 St., Omaha, **$249,074.** Hemmingson Eng. Co., Standard Oil Bldg., Omaha, Zone 2, engr.

North Dakota — RURAL DISTRIBUTION LINES—West Plains Electric Co-operative, Inc., Dickinson, 254.9 mi. rural distr. lines, Stark Co., to T. H. Vicars Co., Minot, **$316,907.** Ulteig Eng. Corp., 114½ Front St., Fargo, engrs.

Oklahoma—RURAL DISTRIBUTION LINES—Indian Electric Co-operative, Inc., Cleveland, 265 mi. rural distr. lines, Pawnee Co., to B-Line Constr. Co., 520 First National Bank Bldg., Oklahoma Citty, **$304,592.** CD 1/19.

Oklahoma—RURAL DISTRIBUTION LINES—Northwestern Electric Co-operative, Woodward, labor only 310 mi. rural distr. lines Woodward Co., to Crews & Ward Co., Columbus, Miss., **$109,661.** Est. $550,000. CD 5/27.

Oklahoma—RURAL DISTRIBUTION LINES—Verdigris Valley Electric Co-operative, Collinsville, 291 mi. rural distr. lines, Rogers Co., to Triple-H Constr. Co., P. O. Box 50, Linton, Ind., labor **$132,212,** materials **$291,000,** total $423,212. CD 5/27.

✦**Oregon**—TRANSMISSION LINE IMPRVS.—Bonneville Power Admin., 729 N.E. Oregon St., Portland, Zone 8, clearing right-of-way, Lakeside-Coos River Sect. Reedsport-Coos Bay 115 kv transmission line, Coos Co., Inv. 4765, Schedule 3, to Murray Bros. Constr. Co., McMinnville, **$51,595;** Schedules 2 and 4, to Hannegan & Ultican, Salem, **$74,400.** Bids 8/26, awarded 8/31. CD 8/12.

South Dakota — RURAL DISTRIBUTION LINES—Camwal Electric Co-operative, Inc., Selby, 401.4 mi. rural distr. lines, Walworth Co., to Zentelli Constr. Co., Ironton, Minn., **$375,471.** CD 6/30.

Texas—NATURAL GAS SYSTEM—Southern Union Gas Co., Port Arthur imprv., enlarging natural gas sys., Owner builds. Approx. **$70,000.**

Que., Rouyn — RINK — Athletic Assn. Inc., Rouyn, concrete, steel ice rink, to Plante Constr. Ltd., 21 Main St. Approx. **$100,000.** A. Martineau, 200 Bay St., Ottawa, Ont., archt.

PROPOSED PROJECTS

WATER SUPPLY

Mo., Huntsville—City, city clk., City Hall, voted $57,000 bonds Aug. 23, 6 mi. waterline, connecting Huntsville with Moberly, water sys., pumping equip., receiving reservoir, **$107,000** etc., W. B. Rollins & Co., 327 Railway Exchange Bldg., Kansas City, Mo., engrs. CD 8/12.

Tex., Eagle Lake—City, Eagle Lake, WW sys. imprvs., pumping plant, lines, 100,000 gal. concrete underground reservoir, $105,000. The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, consult. engrs.

Tex., Lakeview (Port Arthur P. O.)—Town of Lakeview, Port Arthur, water plant, **$250,000;** 17,000 lin. ft. 18 in. watermain running from near Atlantic refinery to Lakeview, **$200,000.** J. B. Converse & Co., Port Arthur, consult. engr. CD 8/12/48.

Tex., Lyford—City, P. C. Cantu, mayor, Lyford, voted bonds Aug. 23, WW sys. imprvs. and extens. **$25,000.** Winston, Sigler & Clark, Weslaco, consult. engrs.

Wash., Toppenish—City, City Hall, bond election Sept. 24 wells and imprv. water system, **$275,000.** G. D. Hall & Assoc., Larson Bldg., Yakima, consult. engrs.

SEWERS, WASTE DISPOSAL

Calif., Los Angeles—Bd. Supervs., Los Angeles Co., 501 Hall of Records, sanitary sewers in 139 St. and other streets, Hawthorne **$50,700;** sanitary sewers in Grandeaur Ave., C. I. 1325, Altadena, **$186,800.** C. E. Aronodll, co. engr. and surveyor.

●**Mich., Benton Harbor and St. Joseph**—City of Benton Harbor, City Hall Benton Harbor and City of St. Joseph, City Hall, St. Joseph, sewage treatment plant, **$1,000,000.** Consoer Townsend & Assoc., 351 E. Ohio St., Chicago, 11, Ill., engrs. CD 6/7/44.

Mo., Richmond—City, city clk., City Hall, defeated **$300,000** bonds Aug. 15, sewage disposal plant, auxiliaries and appurtenances, and sewers. CD 8/9.

Okla., Midwest City — City, Midwest City, voted bonds, sewage disposal plant and sanitary sewer extens. **$132,900.** J. M. Plant, 1323½ N. Robinson St., Oklahoma City, consult. engr. CD 7/28.

Ore., Roseburg — North Roseburg Sanitary Dist., Roseburg, voted bonds, sewer lines and treatment plant, **$250,000.** Cornell, Hayes, Howland & Merryfield, Rennie Bldg., Corvallis, consult. engrs. CD 7/11.

Tex., Eagle Lake—City, Eagle Lake, sanitary sewer lines and sewer plant, **$139,000; storm sewers, drainage, $75,000.** The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, consult. engrs.

Wash., Toppenish—City, City Hall, bond election Sept. 24, treatment plant, laterals and drainage system, **$425,000.** G. D. Hall & Assoc., Larson Bldg., Yakima, consult. engrs. CD 3/25/46.

Wash., Wilbur City—City Hall, sewer system and treatment plant, **$200,000.** Parker & Hill, Smith Tower, Seattle, Zone 4, consult. engrs.

Wis., Shorewood—Village, 3930 N. Murray Ave., Zone 11, relief sewer system, **$400,000.** H. Schmitt, engr.

Wis., Wauwatosa—City, Wauwatosa, 12 to 18 in. vitr. clay sanitary sewer in W. Meinecke Ave., **$100,000.** H. B. Wildschut, city engr.

BRIDGES

●**Massachusetts**—Commonwealth of Massachusetts, Dpt. P. Wks., 100 Nashua St., Boston.

Charlestown — reconstruction Sullivan Sq., incl. underpass and over pass, and street wid'n. **$6,000,000.** Thomas Worcester Inc., 84 State St., Boston, engr. P. H. Kitfield, ch. engr.

Pennsylvania and New Jersey—Delaware River Joint Comn., Bridge Plaza, Camden, N. J., 8 traffic light bridges on Delaware River Bridge, Phila. Co., Pa., and Camden Co., N. J., **$372,000.** Louis T. Klauder & Assoc., Lincoln Liberty Bldg., Phila., Pa., consult. engrs.

Washington—State Hy. Dpt., Olympia.

King Co.—replacing 7 timber bridges on Snoqualmie Pass Hy. between Issaquah and North Bend, $344,000. W. A. Bugge, state hy. dir.

STREETS AND ROADS

Ariz., Phoenix — Maricopa Co. and City of Phoenix, Phoenix, wid'n. 7 mi. Camelback Rd., Grand Ave. to 24 St., **$420.000.**

Calif., Long Beach — City, Long Beach, imprv. First St. and other streets, over **$145,190.** James Kincaid, street supt.

Connecticut—State, G. Albert Hill, state hy. comr., State Office Bldg., Hartford.

East Hartford—b. conc., Connecticut Blvd., paving, wid'n. Pitkin St., storm sewers, Thomas, Cherry and Governor Sts. **$300,000.** R. E. Jorgensen, State Office Bldg., Hartford, engr.

●**Massachusetts**—Commonwealth of Massachusetts, Dpt. P. Wks., 100 Nashua St., Boston, exten. 19.7 mi. Rt. 128, Lynnfield, to Worcester Tpk., incl. 35 bridges, **$6,000,000.** Thomas Worcester Inc., 84 State St., Boston, engr., P. H. Kitfield, ch. engr.

Neb., Lincoln—City, City Hall, resurf. O St., from 9 to 27 Sts., **$150,000.** D. L. Erickson, city engr. CD 1/17/45.

●**New Mexico**—State Hy. Dpt., Santa Fe and City of Las Vegas.

San Miguel Co. — Urban Highway System, incl. concrete curb and gutter, drainage, b. conc. surf., grading. **$1,000,000.** Hasie & Green Engineering Co., Wilson Bldg., Lubbock, Tex., engrs.

Tex., Beaumont—Jefferson Co., Courthouse, defeated bonds, road imprvs. and paving, 28 mi. Precinct 1, **$600,000;** 32 mi. Precinct 2, **$600,000;** 34 mi. Precinct 3,**$600,000.** 26 mi. Precinct 4, **$600,000.** Charles L. Davidson, county engr. Project abandoned. CD 7/13.

Tex., Eagle Lake—City, Eagle Lake, asph. paving, $225,000. The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, consult. engrs.

Tex., Post — Garza Co., Courthouse, voted bonds, asph. road paving, various parts of county. **$300,000.** Hasie & Green, Wilson Bldg., Lubbock, consult. engrs. CD 8/19.

Washington—State Hy. Dpt., Olympia.

King Co.—wid'n. Snoqualmie Pass Hy., 1 mi. west of summit, **$100,000.**

King and Kittitas Counties — resurf. Snoqualmie Pass. Hy. from 1 mi. west to 4 mi. east of summit, **$100,000.** W. A. Bugge, state hy. dir.

†Wash., Port Angeles — Dpt. Interior, National Park Service C St. between 18 and 19 Sts. N. W., Wash., D. C., road on Hurricane Ridge behind Port Angeles, to connect with Olympic Hy., **$600,000.**

EARTHWORK, WATERWAYS

●**†Michigan**—U. S. Eng., 609 Federal Bldg., Detroit, Zone 31, enlargement and rectification 12 mi. Red Run Channel, from intersection of Campbell and 12 Mile Roads, to junction Red Run and South Branch, Red Run Flood control project. Approx. **$1,000,000.**

Mo., Kirksville—City, City Hall, voted **$531,000** bonds, earth fill dam. J. W. Shikles & Co., Reliance Bldg., Kansas City, Mo., engr.

AIRPORTS AND AIRBASES

Ky., Corbin and London—AIRPORT—Cities of London and Corbin, London and Corbin, airport to be located between London and Corbin, **$240,000.** CD 12/27/44, under Corbin.

Ky., Middlesboro—AIRPORT—Middlesboro Bell Co., Airport Bd., c/o C. A. Bailey, Middlesboro, commercial airport incl. 3,500 ft. runway. Approx. **$200,000.** M. C. Simpson & Assoc., Bowman Field, Louisville, engrs. CD 12/27/44.

Tex., Beaumont—TERMINAL—Jefferson Co. Courthouse, defeated bonds, passenger airlines terminal, **$737,200.** Charles L. Davidson, county engr. Project abandoned. CD 7/15.

LATIN AMERICA

Bolivia, Beni—Republic of Bolivia, La Paz, plans meat packing and refrigeration plant. **$300,000.**

Brazil—Federal Govt., Rio de Janeiro, plans 2,300 ft. bridge across the Rio Doce (Sweet River), on highway to link Vitoria and Bahia. Approx. **$400,000.**

B. W. I., Jamaica, East Kingston—The Caribbean Cement Co., Ltd., Kingston, plans 100,000 ton capacity per year cement plant. **$1,000,000.**

B. W. I., Kingston—Municipality, plans dam and reservoir. **$800,000.** H. Humphryes, c/o owner, engrs.

B. W. I., St. Lucia, Castries—Govt. of St. Lucia, Castries, plans municipal centre, combining Govt. offices, law courts and city hall. **$2,000,000** Colonial Development Corp., London, England, engrs.

B. W. I., Trinidad, Port of Spain—Trinidad Leaseholds Ltd., Port of Spain, plans sulphur plant. **$300,000.**

Colombia, Paz de Rio—Republic of Colombia, Bogota, plans national steel plant. **$665,000.**

El Salvador, Metepan—Republic of El Salvador, San Salvador, plans cement factory. **$1,000,000.**

●**Mexico, Acapetahua**—Mexican Govt., Sria. de la Marina, Mexico, D. F., plans sea port. **$1,500,000.**

Mexico, Mexico City—R. Koestinger, J. M. Velasco, 110, Mexico, D. F., plans plastic articles factory. **$250,000.**

Mexico, Mexico City—Radiotecnica, S. A., Cipres, 164, Mexico, D. F., Mexico, plans radio receiving set factory. **$300,000.**

Santo Domingo, Jaina—Dominican Republic, Ciudad Trujillo, plans sugar mill, 8 mi. west of Ciudad Trujillo, **$500,000;** plans petroleum refinery on east bank of Jaina River, **$1,000,000.**

Venezuela—Republic of Venezuela, Caracas, housing at Cabinas, Catia de la Mar and at Barcelona. **$8,000,000.**

Venezuela, Barinas—Republic of Venezuela, Caracas, plans housing for 10,000 persons. **$12,000,000.**

Venezuela, Playa Grande—Republic of Venezuela, Caracas, plans 1,500 houses, parks schools and athletic fields. **$11,400,000.**

PUBLIC BUILDINGS

Ark., Osceola — HOSPITAL — Mississippi County, Osceola, bond election October 11, hospital, **$300,000.** Bruce R. Anderson, Wallace Bldg., Little Rock, archt.

Calif., Bakersfield — SCHOOL — Bakersfield City School Dist., Bakersfield, plans by Wright, Metcalf & Parson, 111 Morgan Bldg., elementary school, **$465,500.** Hillman & Howell, 816 W. Fifth St., Los Angeles, structural engrs. CD 4/23/45.

Calif., Glendale—CITY HALL ANNEX—City, Glendale, bond election Nov. 8, 4 story city hall annex, police and jail facilities, **$950,000.** Albert E. Hansen, 257 S. Spring St., Los Angeles, archt.

Calif., Glendale—SCHOOL—Glendale Unified School Dist., Glendale, plans by Graham Latta, 940 Alma St., Glendale, brick, rein.-con. Thomas Jefferson School. **$270,000.** CD 5/31/45.

Calif., Hemet—SHOP—Hemet Union High School Dist., Hemet, steel frame shop, **$100,000.** Bowen, Rule & Bowen, 2835 Gilroy St., Los Angeles, consult. engrs.

Conn., South Windsor—SCHOOL—Town, Bd. Selectmen, Town Hall, brick, concrete elementary school, Ayers Rd., Wapping Sect., **$250,000.**

Conn., Windsor—SCHOOL—Town, Bd. Educ., City Hall, brick, steel elementary school, Deerfield Sect., **$250,000.** CD 11/22/44.

●**Idaho, Pocatello**—GYMNASIUM, etc.—Idaho State College, plans by Pariadce & Hunter, 50 W. Center Ave., 180x300 ft. rein.-con. brick gymnasium and swimming pool, **$1,000,000.**

●**Ill., Chicago**—HOUSING—Chicago Housing Auth., 343 S. Dearborn St., Chicago, Zone 4, plans by Loewenberg & Loewenberg, 111 W. Monroe St., Zone 3, relocation center 7, 14 and Racine Ave., **$2,000,000;** plans by George & Wm. Keck, 612 N. Michigan St., Zone 11, relocation center 9, 34 and Calumet Sts., **$2,000,000.** CD 1/10.

Ill., St. Charles—CHAPEL—State of Illinois, Dpt. Welfare, Springfield, chapel, Illinois State Training School for Boys, **$275,000.** CD 4/9/45.

Ill., Wilmette—SCHOOL—Bd. Educ., Wilmette, plans by Childs & Smith, 20 N. Wacker Dr., Chicago 6, Avoca school addn., 2926 Illinois St., **$250,000.**

La., Abbeville—COURT HOUSE—Vermillion Parish Police Jury, Abbeville, **$950,000** bond election November 8, court house. CD 7/28.

●**N. J., Passaic**—HOUSING—Passaic Housing Auth., Passaic, plans by Kelly & Gruzen, 1180 Raymond Blvd., Newark, 2000 unit low rent housing project. **$10,000,000.**

●**N. Y., New York** — WINGS — Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., plans by Robert B. O'Connor & Aymar Embury II, 101 Park Ave., Zone 17, reconstruct Wings A, B and C, construct new Wing Z for Metropolitan Museum of Art, **$3,000,000.** Tuck & Eipel, 101 Park Ave., Zone 17, structural engr. CD 3/22/43.

●**O., Cincinnati**—HIGH SCHOOL—Bd. Educ., 216 E. 9 St., plans by Rapp & Meacham, Times Star Bldg., 1st bldg., 3 story, bsmnt, 62x212 ft.; 2nd bldg., 1 story bsmnt, 88x100 ft.; 3rd bldg., 2 story bsmnt, 32x80 ft. rein.-con. and brick Stowe Junior High School. **$1,160,000.** Bodenstein & Schuster, 2nd Natl. Bank Bldg. and Hixon Tarter & Assoc., Peoples Bank Bldg., consult. engrs. CD 11/12/48.

●**O., Cincinnati**—SCHOOL—Bd. Educ., 216 E. 9 St., plans by S. Hannaford & Sons, 1024 Dixie Terminal Bldg., 2 story bsmnt., rein.-con., brick Clark-John Sts., elementary school. **$1,000,000.** W. E. Bodenstein & Schuster, 2nd Natl. Bank Bldg., consult. engrs. CD 11/12/48.

O., Cincinnati — MEDICAL BLDG. — State, Pub. Welfare Bd., State Office Bldg., Columbus, plans by Mueller, Hair & Hetterich, Hamilton Hotel, Hamilton, 3 story bsmnt., 54x42x154 ft. T shaped, brick medical bldg., and driveways, **$697,540.** Bodenstein & Schuster, 2nd Natl. Bank Bldg., consult. engrs.; H. G. Allen, c/o owner, engr. CD 12/23/46.

●**Okla., Blackwell** — POWER PLANT—City, Blackwell, voted bonds, power plant extens. **$1,250,000.** Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 8/16.

●**Pa., Harrisburg**—HIGH SCHOOL—Harrisburg School Bd., 121 Chestnut St., plans by Lawrie & Green, 321 N. Front St., Camp Curtin Junior High School 6 and Division Sts. **$1,500,000;** plans by C. J. Lappley, Riverview Manor Apartments, addn. to or reconstruct Edison Junior High School. **$750,000.** CD 5/31.

●**Pa., Phila.** — SLUM CLEARANCE—Phila. Redevelopment Auth., 21 St. and Parkway, slum clearance 10 acres, E. Poplar area. **$15,000,000.**

●**S. C., Charleston**—HOUSING—Housing Auth. of City of Charleston, 20 Franklin St., housing projects, 1,300 unit for Negroes and 400 units for White people. **$2,500,000.** CD 7/14.

S. C., Charleston—SANATORIUM—Charleston County Tuberculosis Assoc., The Center, voted **$375,000** bonds, tuberculosis sanatorium. $600,000. CD 3/14/45.

●**Tex., Austin**—POLICE HEADQUARTERS—State Bd. Control, Dpt. of State Police, Capitol Bldg., masonry state police headquarters, in North Austin, on Dallas-Fort Worth Hy. **$1,000,000.**

Tex., Austin—JOURNALISM—University of Texas, Bd. of Regents, Austin, plans by Jessen, Jessen, Millhouse & Greeven, 112 E. 9 St., cut stone and brick exterior, concrete frame School of Journalism, **$600,000.** Mark Lemmon, 1210 Main St., Dallas, consult. archt. CD 3/4.

●**Tex., Bay City**—HOUSING—Bay City Housing Auth., c/o R. H. Minton, exec.-secy., Bay City, 150 housing units. **$1,250,000.**

Tex., Donna—SCHOOL—Donna Independent School Dist., Donna, voted **$200,000** bonds Aug. 20, masonry school. $250,000.

●**Tex., McAllen**—HOUSING—McAllen Housing Auth., c/o W. D. Whalen, McAllen, plans by Zeb Rike, 209½ S. Main St., 400 housing units. **$3,000,000.** Olin Boese, 3322 Bristol St., Houston, consult. engr.

Tex., Mason—SCHOOL—Mason Independent School Dist., Mason, voted bonds, grammar school, **$250,000.** CD 8/2.

Tex., Mathis—SCHOOL—Mathis Independent School Dist., Mathis, plans by E. Kellner, 406 Austin Hy., San Antonio, masonry school. **$275,000.**

Tex., San Antonio—HIGH SCHOOL—Northeast Rural High School Dist. 6, c/o V. O. Beck, chn. of Board, Route 10, voted bonds, Aug. 27, masonry high school and some remodeling, **$325,000.**

●**Wash., Seattle**—HOSPITAL—University of Washington, E. 40 St. and 15 Ave. N.E., Zone 5, plans by Naramore, Bain, Brady & Johanson and McClelland and Jones, Dexter Horton Bldg., Zone 4, hospital, **$10,000,000.** CD 6/2.

Wis., Madison—AGRICULTURAL DORMITORY—Bd. Regents, University of Wisconsin, plans by Roger C. Kirchhoff, State Capitol, Madison, state archt., agricultural dormitory, **$900,000.**

Ont., Blenheim —SCHOOL— Blenheim High School Bd., E. M. Warwick, chn., plans by D. J. Cameron, Bartlet Bldg., Windsor, 2 story brick, concrete high school addn., Chatham St., Approx. **$250,000.**

Ont., Toronto—MUNICIPAL BLDGS.—Twp. of York, H. A. Hall, clk., 40 Jarvis St., plans by Shore & Moffat, 79 Queen St. E., Toronto, 2 story, bsmnt., 40x235 ft. concrete, steel, brick main bldg., 1 story 50x175 ft. brick, steel, concrete police offices, garage and boiler house, Approx. **$600,000.** CD 12/15/47.

COMMERCIAL BUILDINGS

Ariz., Scottsdale — HOTEL — Nathan Shayne, Mackinac, Mich., plans by William Green, and Nicholas G. Sakellar, Tucson, 5 story 123x150 ft. hotel, shops, swimming pool, **$700,000.**

Calif., Merced—OFFICE—Farmers Insurance Group, 4680 Wilshire Blvd., Los Angeles, plans by Walter Wagner, Fulton-Fresno Bldg., Fresno, 35,000 sq. ft. office, **$300,000.** CD 7/21.

Conn., Westport—SCHOOL—Church of the Assumption, Rev. John H. Landry, pastor, 115 Riverside Ave., plans by Oliver Reagan, 77 Evergreen Ave., brick, steel parochial school, site on Saugatuck River, **$475,000.** CD 8/17.

●**Ga., Atlanta** — OFFICE — Air Terminal Building Inc., c/o John E. Summer, archt., 737 W. Peachtree St. N. E., 15 story office. Approx. **$3,000,000.**

●**La., New Orleans**—HOUSING—American Legion Post 333, Andrew P. Carter, adjutant, 107 Camp St., 391 houses, **$2,737,000;** 109 dwellings, **$833,000.**

●**Minn., Mankato**—HOSPITAL—St. Josephs Hospital, Sisters of Sorrowful Mother, Sister Superior, M. Margaret, plans by Sister M. Bartholomea, c/o Sisters of the Sorrowful Mother, 6718 Cedarburg Rd., Milwaukee, Wis., 6 story, hospital, Plum St., bounded by Marsh, Dickinson, Main and Oak Lawn Sts., **$1,000,000;** remodel existing hospital, into home for aged in 400 block No. 5 St., **$250,000.**

●**Mo., St. Louis**—HOSPITAL—John Cardinal Glennon Memorial Hospital, c/o Archbishop Joseph E. Ritter and Leo J. Wiech, gen. chn. Building Fund Campaign Comm., c/o Famous-Barr Co., 804 Olive St., St. Louis, Zone 1, rein.-con. brick, steel, stone childrens hospital. **$5,000,000.**

●**O., North College Hill**—RESIDENCES—Paul & Nelson, 1203 N. Bend Rd., Cincinnati, 100, 1½ story bsmnt., brick, residences, separate contracts. **$1,000,000.** Larry Paul, c/o owner, engr.

●**Okla., Tulsa**—HOSPITAL—Hillcrest Hospital, 1653 E. 12 St., plans by Leon Senter, Philtower Bldg., Hillcrest Memorial Hospital addn. **$1,425,000.**

●**Tenn., Murfreesboro**—HOMES—Owner, c/o Herman Jackson & Alvis T. Huddleston, Murfreesboro, 400 homes. Approx. **$1,000,000.**

Tenn., Nashville — THEATER—Crescent Amusement Co., c/o Marr & Holman, archts., Stahlman Bldg., rebuild Princess Theater. **$600,000-$800,000.**

●**Tex., Baytown** — DWELLINGS—Baytown Constr. Co., c/o B. F. Sturman, Sterling Bldg., Houston, 168 dwellings in last of Wynnewood Addn. **$1,100,000.**

●**Ont., Eastview** — HOUSING — Capital City Co-operative Bldg. Society Ltd., Ottawa, Ont., 200 houses Montreal Rd., 3 mi. east of here, Approx. **$1,200,000 to $1,400,000.**

●**Que., Montreal**—HOTEL—Garinther Assoc. Inc., 1434 St. Catherine St., 10 story hotel, Dorchester St., **$1,000,000.**

INDUSTRIAL BUILDINGS

Ala., Ozark—WAREHOUSE, etc.—Pea River Electric Co-operative, Ozark, warehouse and office. **$100,000.**

Colo., Grand Junction—PLANT, etc.—The Daily Sentinel, 634 Main St., Grand Junction, plans by Smith, Hegner & Moore, 132 South 4 St., 2 story 50x125 ft. brick printing plant and office addn., and remodeling. **$135,000.**

●**Colo., Montrose**—PLANT—Western Colorado Power Co., Montrose, steam electric plant, **$1,250,000.**

●**Pa., East Greenville**—PLANT—Upper Perkiomen Valley Board of Trade, East Greenville, yarn plant. **$1,800,000.**

●**Wash., Seattle** — WAREHOUSE—Standard Oil of California, 225 Bush St., San Francisco, Calif., petroleum accessories and repair warehouse, 22 storage tanks, with capacity of 154,000 barrels, pier, garage, boiler, pump house, loading rack and bulkhead. **$1,000,000.**

●**Ont., Chatham** — FACTORY — International Harvester Co. of Canada Ltd., Sherman St. W., Hamilton, 1 story, 88x704 ft. rein.-con. steel, brick factory extens., Approx. **$2,000,000.** C. E. Blackburn, ch. engr.

Que., Joliette—FACTORY—Acme Glove Wks. Ltd., St. Charles St., corner Baby St., 2 story bsmnt. and 1 story 150x200 ft. concrete, steel, brick factory addn., Approx. **$200,000.**

UNCLASSIFIED

Kan., Kansas City—SWIMMING POOLS—City, City Hall, swimming pools. **$250,000.** R. B. Reeves Kansas City, Kan. CD 8/9/46.

●**Louisiana** — NATURAL GAS PIPELINE—United Gas Pipe Line Co., 1525 Fairfield Ave., Shreveport, 224 mi. natural gas pipeline, from Mansfield, to near Bogalusa, **$25,000,000;** 106.6 mi. natural as welded joint pipeline, from near Mansfield to Monroe, **$4,000,000.**

●**Louisiana, Mississippi, Alabama, Georgia and Florida**—NATURAL GAS PIPE LINE—Atlantic Gas Co., c/o W. Scott Wilkinson, Slattery Bldg., Shreveport, La., 1,731 mi. natural gas pipe line, from New Orleans, La., to Jacksonville, Fla., **$92,000,000.**

La., Shreveport — STADIUM — City, City Hall, municipal stadium addn., **$400,000.**

Tex., Bryan — RURAL DISTRIBUTION LINES—City, Bryan, bond election September 20, 458 mi. rural distr. lines. **$756,000.** CD 8/12.

●**Nebraska**—RURAL DISTRIBUTION LINES—Loup River Public Power Dist., Columbus, rural distr. lines, **$5,412,000.** REA allot. P. E. Hampton, c/o owner, ch. engr. CD 7/10/45.

†**Marshall Islands** — FACILITIES — U. S. Atomic Energy Comn., Wash. 25, D. C., maintenance and imprv. of facilities at the Atomic Energy Comn. Proving Ground at Eniwetok Atoll. Holmes & Narver, 824 S. Figueroa St., Los Angeles, Calif., engrs.

●**N. S. Sydney**—DOCKS—Government of Canada, Dpt. P. Wks., Hunter Bldgs., Ottawa, Ont., and Canadian National Railways, B. Wheelwright, ch. engr., 360 McGill St., Montreal, Que., docks. **$2,900,000.**

Proposal Advertisements see pp. 90 and 91

U. S. Government

NOTICE IS HEREBY GIVEN that sealed bids will be received at Casper, Wyoming, until 10 a.m., Mountain Standard Time, September 29, 1949, and then publicly opened for furnishing labor and materials and performing all work for erecting one prefabricated steel 24-car Government storage garage at Reclamation Center near Casper, Wyoming, Kortes Unit, Wyoming, Missouri River Basin Project.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: **A. A. Baston,** Regional Director, New Customhouse, Denver, Colorado, and I. J. Matthews, District Manager, Casper, Wyoming. No charge to prospective bidders for copies of the specifications and drawing; to others $1.00 per copy, not returnable.

(353)

NOTICE IS HEREBY GIVEN that sealed bids will be received at Casper, Wyoming, until 10 a.m., Mountain Standard Time, October 4, 1949, and then publicly opened for furnishing and delivering the low voltage steel structures and anchor bolts for the Cheyenne Substation Additions, Kendrick Project, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: **A. A. Batson,** Regional Director, New Customhouse, Denver, Colorado, and I. J. Matthews, District Manager, Casper, Wyoming. No charge to prospective bidders for copies of the specifications and drawings; to others $0.50 per copy, not returnable.

(352)

NOTICE IS HEREBY GIVEN that sealed bids will be received at Casper, Wyoming, until 10 a.m., Mountain Standard Time, September 28, 1949, and then publicly opened for furnishing and delivering miscellaneous power and control cabinets for the Kortes Power Plant, Missouri River Basin, Project.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: A. A. Batson, Regional Director, New Customhouse, Denver, Colorado, and I. J. Matthews, District Manager, Casper, Wyoming. No charge to prospective bidders for copies of the specifications and drawings to other $0.50 per copy, not returnable.

(351)

OFFICIAL PROPOSALS

Bids: September 29, 1949 (356)

Furnishing & Delivering Cast-Iron Pipes & Fittings, etc.

COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT
COMMISSION

Sealed proposals will be received at the office of the Metropolitan District Commission, 20 Somerset Street, Boston, Massachusetts, util 1:00 P.M., Eastern Standard Time, Thursday, September 29, 1949, and then publicly opened for Contract No. 179 for furnishing and delivering cast-iron pipe and fittings, gate valves, automatic cone valves, motor driven centrifugal pumps and Venturi meter and appurtenances in the City of Newton, Massachusetts. There are five groups of items which may be awarded as a whole or as separate contracts, but no single group will be further subdivided and awarded to more than one bidder. Each bidder may submit a price one one or more of these groups, but must quote on each item of the particular group or groups bid. Each bidder shall deposit cash or certified check as security in the amount of $225 for Group A, $360 for Group B, $315 for Group C, $630 for Group D, and $120 for Group E. A bond in at least the full amount of the contract will be required of each successful bidder to secure the faithful performance of the contract, and for the payment of all persons performing labor or furnishing materials in connection therewith. The information for bidders, forms of proposal, contract and performance bond, and plans and specifications may be examined at the above address, and copies thereof obtained from Karl R. Kennison, Chief Engineer of the Construction Division, upon deposit of $5, to be refunded only to bidders or to others returning them within ten days after the opening of bids. The Commonwealth reserves the right to

OFFICIAL PROPOSALS

waive any informality in, or to reject, any or all proposals. No bidder may withdraw his bid within thirty days after the actual date of the opening thereof. A proposal which includes for any item a bid that is abnormally low or high may be rejected as unbalanced.

WILLIAM T. MORRISSEY,
Commissioner

September 8, 1949

Bids: November 2, 1949 (358)

New Basin Canal Fill

NOTICE TO CONTRACTORS

Sealed proposals for the construction of the following project will be recevied by the Louisiana Department of Highways, Room 310, Highway Office Building, Baton Rouge, Louisiana, until 10:45 A. M. on Wednesday, November 2, 1949. After 10:45 A. M., proposals will be received in the Chamber of the Court of Appeals in the State Capitol until 11:00 A. M. No proposals will be received after 11:00 A. M. At 11:00 A. M. of the same day and date they will be publicly opened and publicly read in the Chamber of the Court of Appeals in the State Capitol

STATE PROJECT NO. 283-07-04, FEDERAL AID PROJECT NO. U-409(1), NEW BASIN CANAL FILL FOR PONTCHARTRAIN EXPESSWAY located in ORLEANS PARISH. Length: 1.944 miles. Type: SELECT FILL and other work in connection therewith.

The attention of bidders is directed to the provisions covering subletting or assigning the contract.

The minimum wage paid to labor on this project shall be as follows:

Skilled labor: One dollar ($1.00) per hour.

Intermediate labor: Sixty cents ($0.60) per hour.

Unskilled labor: Forty cents ($0.40) per hour.

Full information and proposal forms are available at the offices of the Department of Highways at Baton Rouge. Plans and specifications may be inspected at said office or plans will be furnished upon payment of $3.00 without cross section sheets or $11.00 with cross section sheets (not to be refunded). In order to assist prospective bidders in making a thorough inspection of the New Basin Canal site, the water elevation in the canal throughout this project will be lowered to approximate elevation −5.0 M. G. L. during a ten day period beginning Sunday, October 23, 1949, and ending Tuesday, November 1, 1949.

Bids must be submitted on proposal forms provided by the Department.

The Department reserves the right to reject any or all proposals.

DEPARTMENT OF HIGHWAYS
R. B. RICHARDSON, DIRECTOR

Bids: October 13, 1949 (357)

Construction of Addition to Water Purification Plant

NOTICE TO CONTRACTORS

Bids will be received on October 13, 1949, for the construction of an addition to the Cedar Rapids, Iowa, Water Purification Plant, consisting of an extension to the filter building, filter equipment, concrete mixing, sedimentation, and clarifier basins and equipment, and the necessary pipe connections for increasing the purification capacity 12 M.G.D. The work is divided into three parts:

A—Structures and Piping
B—Mixing and Clarifier Equipment
C—Filter Equipment

Copy of official advertisement may be obtained from City Clerk, Cedar Rapids, Iowa.

Plans and specifications may be obtained by depositing cash or a certified check payable to the City of Cedar Rapids, Iowa, or to Alvord, Burdick & Howson, 1401 Civic Opera Bldg., Chicago 6, Illinois, in the amount of $25.00 for Contract A, $10.00 for Contract B, and $20.00 for Contract C, for each set of documents so obtained. The amount of the deposit for one set of documents will be refunded to each actual bidder who returns the plans and documents in good condition within ten days after the opening of bids. Additional copies of the contract documents may be bought for the same price, with no refund.

Maude M. Krebs,
City Clerk,
Cedar Rapids, Iowa

(Continued on page 91)

OFFICIAL PROPOSALS

(Continued from page 90)

Bids: September 29, 1949 (355)

Repairs to Concrete Balustrades

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 25, SECTION 34G

For repairs to the concrete balustrades on Route 25, Section 34G, from Niagara Street to South End of Viaduct, City of Newark, Essex County. The work consists of the removal and replacement of damaged portions of the balustrades by granite and concrete. The principal items of construction are:

Estimated:

456 bags of Cement—Pneumatically applied mortar

1,700 cu. ft. of Class A Concrete

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J. on Thursday, September 29, 1949, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adpoted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bids, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, tSate House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: September 28, 1949 (354)

Earth & Embankment Work, Bridges, Service Road, etc.

STATE OF RHODE ISLAND AND
PROVIDENCE PLANTATIONS
DEPARTMENT OF FINANCE
DIVISION OF PURCHASES
NOTICE TO ROAD AND BRIDGE CONTRACTORS

Sealed Proposals addressed to the Division of Purchases, for the construction of the following project will be received by the Division of Purchases at the office of the State Purchasing Agent, Room 123 State House, Smith Street, Providence, R. I., until 10:00 A.M. (EST) on the 28th day of September 1949, at which time they will be opened and read in public.

R. I. Contract No. 4917, R. I. Federal Aid Project No. U-UG-143(1), County of Providence, Olneyville Square, Providence, Rhode Island. Expressway from Hartford Avenue to end of limits of CONTRACT ONE, consisting of Earth and Embankment Work, Bridges, Service Road No. 4, Atwood Street Extension, Walls and Other Incidentals.

Bids for the above work must be made on blanks furnished by the Department of Public Works, Division of Roads and Bridges. Plans and specifications and Special Provisions may be examined at Room 123

State House or Room 224 State Office Building, Providence, R. I., on and after Wednesday, September 7, 1949, every week day except Saturdays and holidays, between the hours of 8:30 A.M. and 4:30 P.M. Blanks for submitting proposals may be obtained thru the office of the State Purchasing Agent at the address above stated. A deposit of $50.00 shall be made for each set of contract documents, which will be refunded if plans and specifications are returned in good condition prior to October 19, 1949.

A certified check or bid bond payable to the State of Rhode Island, or cash, in the amount of $30,000, must be furnished by each bidder.

This Proposal Guaranty will be returned after the contract has been executed. A performance bond of one hundred (100) per cent of the contract price with a satisfactory surety company will be required of the successful bidder. The Division of Purchases reserves the right to reject any or all bids.

FEDERAL REQUIRED CONTRACT PROVISIONS: The attention of prospective bidders is called to the fact that this project is to be bid upon and the contract executed under the rules and regulations for Carrying Out the Provisions of the Federal Aid Highway Act of 1944 and the Special Provisions, dated July 2, 1948, as amended and supplemented, as required by the Department of Commerce, Bureau of Public Roads.

EMPLOYMENT LISTS: A local employment service has been designated by the R. I. Employment Service to prepare the employment lists for the project. Requests for men to be employed on this project shall be submitted to the District Office at 112 Union St., Providence, R. I.

WAGES OF LABOR: In conformity with the provisions of Chapters 290 and 291, General Laws, 1938, the minimum wages for a day's work paid craftsmen, teamsters and laborers shall not be less than the customary and prevailing rate of wages for a day's work in the same trade or occupation in the locality where the work is undertaken. Such a schedule of wages has been established on a minimum hourly basis and is on file in the office of the State Department of Labor. The contractor shall pay not less than these minimum wage rates.

The attention of bidders is invited to the fact that the R. I. Department of Public Works, Division of Roads & Bridges, has been advised by the wage and Hour Division, U. S. Department of Labor, that contractors engaged in highway construction work are required to meet the provisions of the Fair Labor Standards Act of 1938 (52 Stat. 1060).

SUBLETTING OR ASSIGNING THE CONTRACT: The attention of bidders is directed to the Standards and/or Special Provisions covering subletting or assigning the contract.

DEPARTMENT OF FINANCE, DIVISION
OF PURCHASES
By Franklyn A. Adams,
State Purchasing Agent

Bids: September 16, 1949 (343)

Construction of Pumping & Sewage Treatment Units

Sealed proposals will be received by the Chairman and Members of the Gloucester City Sewerage Authority at the City Hall, Gloucester City, N. J., until 8:00 o'clock P.M., Eastern Daylight Saving Time, on the Sixteenth day of September, 1949, for the following Contracts for the Construction of the Pumping and Sewage Treatment Units of the Sewage Treatment and Refuse Incineration Plant embracing the following contracts:

Contract No. 1. Piling
Contract No. 2 General Construction
Contract No. 3 Mechanical
Contract No. 4 Plumbing
Contract No. 5 Heating
Contract No. 6 Ventilating
Contract No. 7 Electrical
Contract No. 8 Sanitary and Intercepting Sewers
Contract No. 9 Incinerator
Contract No. 10 Chimney

at which time and place they will be publicly opened and read.

Copies of drawings, specifications and other contract documents are on file and open to public inspection at the office of the City Engineer, City Hall, Gloucester City, N. J. Complete sets of such documents may be obtained from Andrews & Gieseke, Inc., Engineers, 1405 W. Erie Avenue, Philadelphia 40, Pa., upon deposit of $50.00 for

each set. If the documents are returned in good condition within ten days after the opening of bids, $35.00 of the deposit for each set will be returned to each actual bidder; and $25.00 of the deposit for each set will be returned to each non-bidder, the balance being retained to defray the actual cost of reproduction of the sets of documents. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

Each bidder must deposit with his bid, security in an amount of not less than five percentum (5%) of his base bid, in the form and subject to the conditions provided in the Instructions to Bidders.

No. bidder may withdraw his bid within thirty (30) days after the actual date of the opening thereof.

The Gloucester City Sewerage Authority reserves the right to waive any informalities or to reject any or all bids.

GLOUCESTER CITY SEWERAGE
AUTHORITY
Norman W. Theckston, Secretary.

Bids: October 17, 1949 (549)

Administration Building

Binghamton, N. Y.
September 6, 1949

Broome County Airport
Broome County, New York

1. *SEALED BIDS*, in duplicate, subject to the conditions contained herein will be received until 11:00 A.M., Eastern Standard Time, Monday, October 17, 1949, at the office of the Clerk of the Board of Supervisors, Broome County Office Building, Binghamton, New York, and then publicly opened and read, for furnishing all labor and materials and performing all work for the above-described project in accordance with the plans and specifications.

2. Copies of the plans and specifications may be obtained from the Clerk of the Board of Supervisors, Broome County Office Building, Binghamton, New York, upon payment of a charge of $15.00 for each set requested. Check and money orders should be made payable to the order of the County Treasurer, Broome County, New York. This payment will not be refunded.

3. Plans and specifications will be available for inspection at the offices of:

Conrad & Cummings, Associated Architects, 99 Collier Street, Binghamton, New York; S. P. Carman, Security Mutual Bldg., Binghamton, New York and Seelye, Stevenson & Value, 101 Park Avenue, New York 17, New York.

4. Certified check or bid bond for a sum of not less than 5% of the price will be required for each bid, payable to the order of the County Treasurer, Broome County.

5. Payment and performance bonds in the amount of 100% of the contract sum will be required.

6. The right is reserved, as the interest of the Owner may require, to reject any or all bids, to waive any informality in bids received, and to accept or reject any items of any bid.

7. Envelopes containing bids must be sealed and marked as follows

Bids for Administration Building for Broome County Airport, to be opened at 11:00 A.M., Eastern Standard Time, Monday, October 17, 1949.

8. The right is reserved, as the interest of the Owner may require, to revise or amend the plans and/or specifications prior to the date set for opening bids. Such revisions and amendments will be announced by addenda to all prospective bidders.

HOWARD DAVIS
Clerk of the Board of Supervisors,
Broome County, New York.

CONTRACTORS WATCH
THIS SECTION
for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:

(Not available for equipment advertising)

$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.

INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

PROPOSALS, $1.00 a line an insertion.

INFORMATION.

BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:

The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured 7/8 inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

NEW ADVERTISEMENTS received by September 12th appear in September 22nd issue subject to limitation of space available.

SALARIED POSITIONS $3.500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (39 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St., (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO 68 Post St (4)

POSITIONS VACANT

WANTED—ENGINEERS, Architects, Draftsmen experienced in the design of sewers, sewage treatment plants, water treatment plants and industrial buildings. Also engineers to supervise construction. State qualifications, experience Salary requirements and date available P-1155 Engineering News-Record.

WANTED: AN experienced Engineer for a City of 22,000 population, salary $4,000.00. Address Carl E. Pratt Sr., Mayor, Hastings, Nebraska.

WANTED: EXPERIENCED structural Draftsman for precast concrete plant. Must be able to prepare accurate shop drawings of a precast concrete roof deck on structural steel frame Steady work. Good pay. State qualifications and salary desires Arnold Stone Company Greensboro, North Carolina.

ESTIMATOR—REINFORCING Bar Fabricator operating in the southeast requires services of man capable of making accurate Bar Estimates and also capable of managing Estimating Department. Have openings for Reinforcing Bar Detailers. Write, giving age, availability, experience, capabilities and salary expected P-9838, Engineering News-Record.

OLD ESTABLISHED engineering company invites applications from experienced highway engineers fully qualified position chief engineer and division engineers on important South American project. P-9899, Engineering News-Record

WANTED: ENGINEER. Estimator with experience in heavy construction and foundations. State age, qualifications, experience and salary expected P-9910, Engineering News-Record

WANTED: CONCRETE Paving Research Engineer, age 30 to 45, at least 8 years experience in concrete highway paving construction, design, and testing. Excellent opportunity for engineer interested in research and development. Salary open, depending upon qualifications. Location: near Chicago. P-9911, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALESMEN WANTED—Graduate mechanical, civil or mining engineer, or the equivalent in experience, desired for sales work by manufacturer of excavating equipment Several openings for right men. Do not apply unless you have sold or can prove your aptitude for selling heavy construction machinery. Apply by mail only. Give full particulars and enclose recent photograph. Address Vice President in Charge of Sales. Bucyrus-Erie Company, South Milwaukee, Wisconsin

POSITIONS WANTED

CONSTRUCTION SUPERINTENDENT with excellent background in heavy construction; with following. Geo. W. Urban, Alexander Road, Bedford, Ohio. Phone 1021-J-5.

(Continued on the opposite page)

MECHANICAL ENGINEER

Graduate Engineer with a minimum of 15 years recent experience in the design and layout of large fuel oil storage and transmission facilities.

SENIOR CIVIL ENGINEER

Specialized in Earth Dam design and construction, familiar with soil mechanics including sand drain practice.

For Work On Guam

Send complete record of background to:

PACIFIC ISLANDS ENGINEERS
Frederic R. Harris, Inc.
Blanchard & Maher
Keller & Gannon

Ferry Bldg., San Francisco, Cal.

Chief Civil Engineer WANTED

Established West Coast Engineering firm needs qualified Graduate Civil Engineer to take charge of Civil Department. Thorough knowledge and wide experience required in Civil Engineering including grading, drainage, roads, railroads, and utility layouts for municipalities. In addition, applicant must possess ability to discuss and develop prospective work with municipal, county and state authorities. Furnish complete record with photo. Replies confidential.

P-9814, Engineering News-Record
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(Continued from opposite page)

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1—Huber Tandem 8-12 ton Roller

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(Additional Wanted Ads on page 102)

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Lorain Model 820 Diesel Crane, 40 ton cap. 90' bm.
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Lima 1201 High Lift Diesel Shovel.
P&H Model 1055 High Lift Shovel, Buda Diesel
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American stiff leg 40 to 50 tons 80' boom.
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Rex. 160-180-190-200 with fittings.
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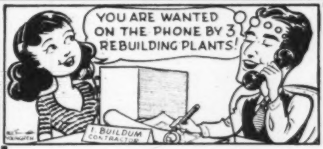
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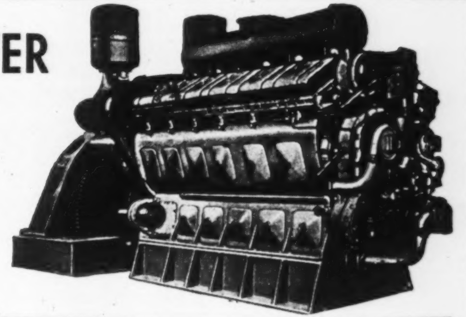

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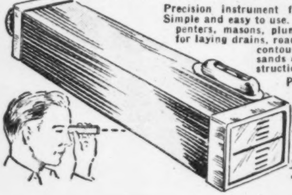

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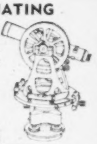

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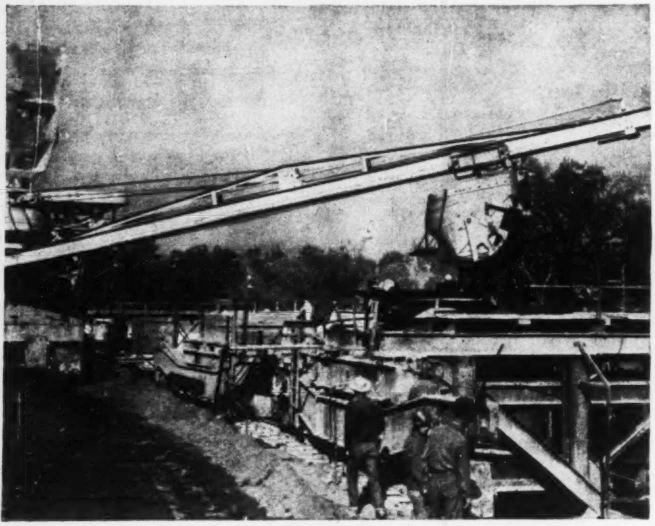


Hydraulically Controlled Concrete Bucket

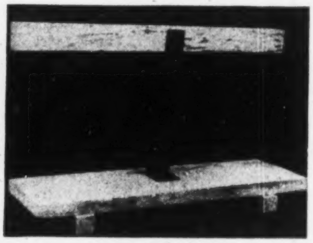
Hydraulically controlled bucket features positive control over all spreading operations. Of the undercut, pivoted type, the bucket gate can be completely opened; or it can be partially opened, the load partially emptied, the door closed, and the remainder of the load dropped at a different point. In addition to its use for high-speed production work on highway and airport slab work, it can be used for narrow forms and openings such as retaining walls, footings, culverts, and Pumpcrete hoppers. One lever controls both bucket travel and gate opening: operating it vertically controls the gate action; operating it horizontally, controls the bucket travel. Both actions can be performed simultaneously with one hand, leaving the other hand free to operate the boom swing.—CHAIN BELT CO. OF MILWAUKEE, 1633 W. BRUCE ST., MILWAUKEE 4, WIS.

Light-Duty Hydraulic Scraper

Hydraulically controlled 2-wheel carrying scraper quickly converts into a tool carrier. The Ateco J-2 has a heaped capacity of 2 cubic yards. It is designed for use with 20 to 35-hp wheel tractors or small track-type tractors. Front apron operates independently of cutting and spreading and is regulated from the tractor seat. Cutting depths range from 0 to 4 inches; spreading depths, from 0 to 11½ inches. Ripper teeth can be fastened to the square bar across the front of the scraper for scarifying work. Wheels are wide base and are equipped with 6.50x16 pneumatic tires. The unit is 6-feet 5-inches wide, 13 feet long, and has a shipping weight of 2,128 pounds. A 3½-cubic-yard unit is contemplated.—AMERICAN TRACTOR EQUIPMENT CORP., 9131 SAN LEANDRO BLVD., OAKLAND 3, CALIF.

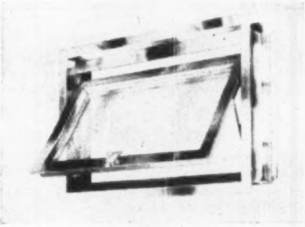
New Swing Clutch

Furnished as standard equipment for swinging and traveling on American locomotive cranes. New design makes outside band type clutch more desirable as it overcomes the problem previously encountered of keeping band perfectly round and enabling its full surface to contact the drum. This has been done by using a double tandem clutch which consists of two half bands rather than one full band. Each half band is actuated by separate air cylinder, both air cylinders being controlled by a single valve. With half bands it is a simple matter to hold proper shape during installation and keep entire band surface in contact with drum, thus avoiding high spots and jerky operation. New clutch is available as replacement on many types of American locomotive cranes now in service.—AMERICAN HOIST & DERRICK CO., 63 S. ROBERT ST., ST. PAUL 1, MINN.



Floor Screed Support

Adjustable floor screed support can be used with pipe screeds, 2x2-inch wood screeds, or with steel screeds. Featuring reusable screed holders, the Adjusto support can be used for any slab thickness between 4 and 18 inches. Other features include quick, simple adjustments, elimination of chairs, and ease of installation.—COLLIER MFG. CO., 720 LAFAYETTE ST., JEFFERSON CITY, MO.



Stainless-Steel Window

Stainless-steel window is fabricated in six standard sizes to fit glass block openings. Construction features include an exclusive tubular design which prevents glass breakage and adds strength and rigidity. Matching stainless steel screen frames with corrosion resistant plastic screening are also available.—MODERN STAINLESS SPECIALTIES CO., 6131 S. WENTWORTH AVE., CHICAGO 21, ILL.

New Arc Welders

A new line of a-c arc welders, featuring increased welding range and stepless precision current control, has been announced. They are available in 200,- 300,- 400,- and 500-amp. models for indoor manual welding; 750- and 1000-amp models for machine and submerged melt welding; and a

(*Continued on page 108*)

These

PRESSURE-RELIEF WELLS ease flood hazards

BYERS WROUGHT IRON PIPE

eases corrosion hazards

Sinking wells to tame a river is an interesting project of the U. S. Corps of Engineers, at Kansas City, Mo.—a project in which Byers Wrought Iron pipe is playing an important role.

During flood stage, the level of the Missouri River may be considerably above the surrounding territory. The upward pressure of the water outside the levee causes "sand boils," endangering the safety of the levee. The Engineers are sinking a number of pressure-relief wells close to the toe of the levee. These will be connected to a pipe collection system, so the subterranean water discharged by artesian flow from these wells can be collected at a central pumping station and pumped into the river. Byers Wrought Iron pipe is used for casing in a number of the wells already drilled.

Although this particular application is new, wrought iron pipe has been used for casing conventional wells for over half a century. Users have reported some remarkable service records. An Illinois municipality pulled some 52-year-old wrought iron casing to enlarge a well—and found it "still in excellent condition." An industrial concern increased the length of the ten-year-old wrought iron flow lines from their wells, by adding three lengths of ordinary piping material. This addition failed in 11 years. Inspection revealed the original wrought iron pipe, then 21 years old, was still in first-class condition. These are only two of many examples that might be cited.

The reason for wrought iron's unusual serviceability is found in its unusual character. The tiny threads of glass-like silicate slag that are distributed through the body of high-purity iron halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

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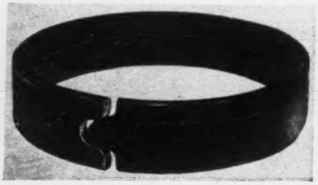
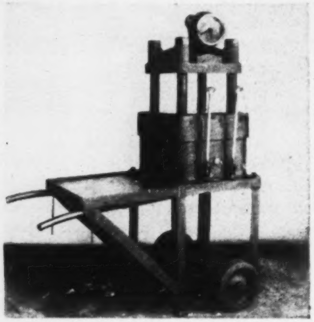
special 200-amp model for light-duty, job-shop welding. The 300,- 400-, and 500-amp. models are offered also in weather-resistant enclosures with Idlematic control for both indoor and outdoor operation. Dual current ranges and increased adjustment overtravel on the new machines provide extra low current range with high maximum short-time output. They are designed with stepless current control, operated by a bearing-mounted current-adjustment crank which enables the operator to make precision settings throughout the current range.—General Electric Co., Schenectady 5, N. Y.



Split-Ring Connectors

Timberlock split-ring connectors are now available, for the first time since the war, in 2½ and 4-inch sizes. These connectors are made from mild steel strip, are precision-made true circles, and have rounded edges to simplify installation in the grooves. —The Marsh Co., Hastings, Nebr.

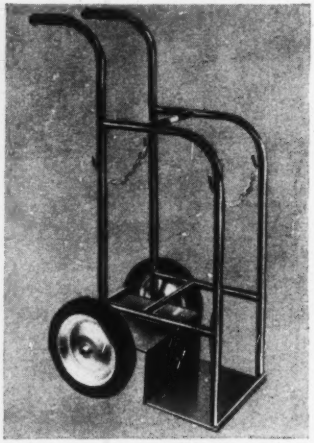


Tests Concrete in Compression

Testing machine exerts a ram pressure of 175 tons for testing concrete materials. It has two manually operated pumps—one to bring the platen into position quickly; the other, to exert crushing pressures very slowly in accordance with ASTM specifications. Two readings are available—one when the first sign of fracture appears; the other, at the point of ultimate destruction. High-walled tray protects operator in case of bursting or shattering.—Forney's, Inc., 209 Elm St., New Castle, Pa.

Balanced Vane Pump

Balanced vane pump is designed in new series expressly for the specialized requirements of hydraulic accessories on construction equipment. The Series V-200 is designed to automatically maintain correct radial and axial clearances at all times—normal wear is perfectly compensated, and the pump automatically adjusts its clearances to oil viscosity variations resulting from temperature changes. Hydraulic balance eliminates bearing loads resulting from pressure, and the vane principle provides for no-load starting. The V-200 pump is made in four capacities for operating pressures up to 1,000 psi.—Vickers, Inc., Industrial Sales Division, 1496 Oakman Blvd., Detroit 32, Mich.



Dolly for Gas Cylinders

Narrow dolly for carrying oxygen and acetylene cylinders has ball-bearing rubber-tired wheels. Of tubular construction, it will carry cylinders 8⅝ inches in diameter. Truck is 38 inches tall, 15½ inches wide, and weighs 29 pounds. Trucks to carry two cylinders in tandem or side by side are also available.—Adams Mfg. & Supply Co., 1422 N. Indiana St., Los Angeles 33, Calif.

Six-Inch Log Log Slide Rule

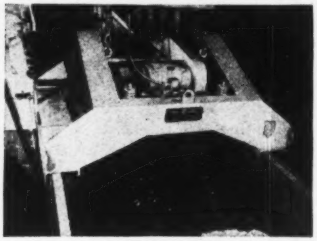
Duplex-type all metal 6-inch log log slide rule has 16 scale arrangements. It has a dimensionally stable magnesium alloy body, with optical tongues and grooves machined to an accuracy of 0.001 inch. The Model 330 rule measures 1$\frac{3}{32}$x6x$\frac{3}{32}$-inch. It comes in a leather pocket case and is provided with an illustrated instruction manual.—Pickett & Eckel, Inc., 5 S. Wabash, Chicago 3, Ill.

Utility 6-Inch Saw

Utility 6-inch saw will cut wood, slate, tile, marble, or ceramics. It is powered by a 110-volt ac/dc motor, sufficient for making a 2-inch cut for ripping or cross-cut operations. Features include stationary upper blade guard, 2-pole trigger switch, telescoping lower blade guard, and weight of 9½ pounds.—Black & Decker Mfg. Co., 659 Pennsylvania Ave., Towson 4, Md.

Safety Goggles

Safety spectacles feature a one-piece Optilite plastic lens. Quick detachable temples may be instantly attached to the outside edge of the lens, making it possible for the wearer to adjust the temples to the position desired. The Saf-I-Spec has an integral molded sweat-bar. Available in crystal clear or anti-glare green, the Saf-I-Spec can be worn over regular glasses.—United States Safety Service Co., 1215 McGee, Kansas City 6, Mo.



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Self-contained vibrator unit speeds unloading of bulk granular materials from open-top hopper-bottom cars. Rotation of the shaker's vibrator shaft causes the vibrator end of the shaker to rise and fall, imparting heavy hammer-like blows to the car equal in number to the speed of the vibrator shaft. Normally, cars are unloaded in one to three minutes, depending on type and condition of material handled. The car shaker weighs 9,500 pounds, complete with a 20-hp 3-phase 60-cycle 220 or 440-volt ac motor.—Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

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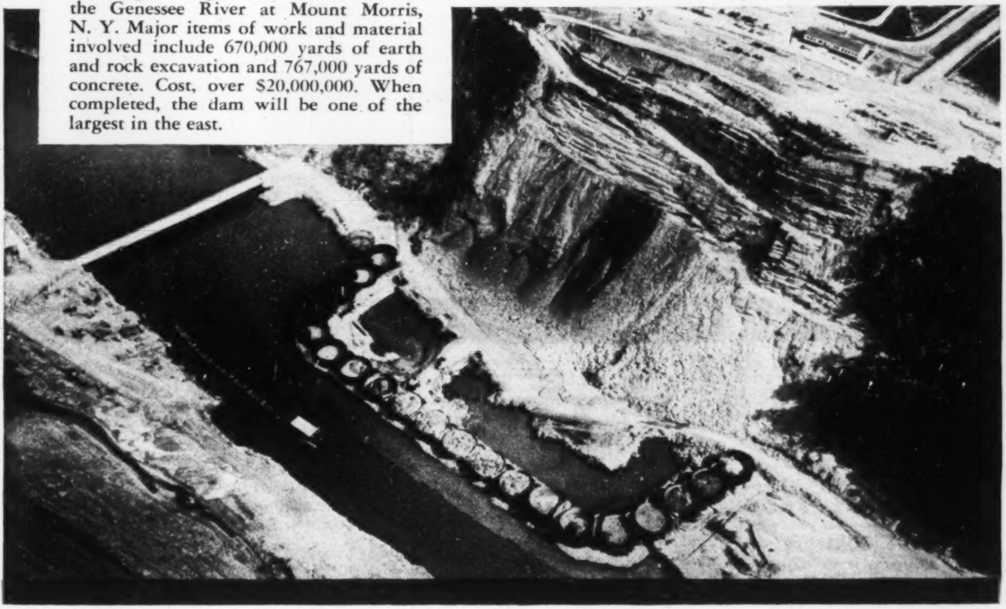
Mount Morris Dam Builders, Inc., consisting of 5 leading contractors, is constructing the huge Mount Morris Dam on the Genessee River at Mount Morris, N. Y. Major items of work and material involved include 670,000 yards of earth and rock excavation and 767,000 yards of concrete. Cost, over $20,000,000. When completed, the dam will be one of the largest in the east.



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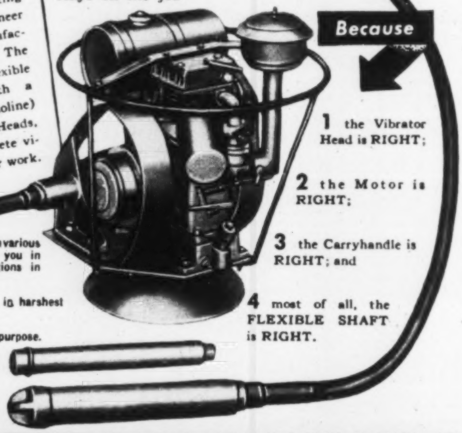

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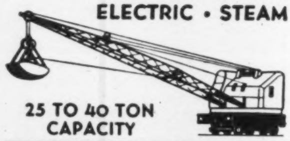

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Manufacturers' Publications

Drainage Structures—Booklet is of interest to anyone connected with specifying or designing drainage structures. Entitled "Engineering Data—Toncan Sectional Plate Pipe, Pipe-Arch, Arches," it contains essential design and estimating information on corrugated, sectional plate drainage products. This compact 16-page manual includes tables on minimum gages for strutted and unstrutted pipe, length and spacing of struts, standard sizes of arches, weights of various products, and plate arrangements.—Republic Steel Corp., 3100 E. 45th St., Cleveland 4, Ohio.

Residential Construction — Construction of mass housing using the Normac method is discussed in 8-p. brochure. The Normac process utilizes production-line methods to manufacture lightweight precast concrete wall and roof sections. Advantages include low cost, durability, and ease of erection. The bulletin illustrates construction details, features of erection, versatility of design, and other engineering data. — Normac, Inc., 7839 Santa Fe Ave., Huntington Park, Calif.

Deep-well Pumps—Illustrated bulletin describes complete line of deep-well pumps. Units listed are available in a wide range of diameters, capacities, heads, etc., to make possible a selection of the most suitable unit for any requirement. Bulletin 49-5000 contains information on the BJ deep-well turbine pumps with bowl assembly sizes for installation in wells from 6 to 24 in., or larger.—Byron Jackson Co., Pump Division, Box 2017, Terminal Annex, Los Angeles 54, Calif.

Fluorescent Fixtures — Complete line of fluorescent lighting fixtures is listed in 74-p. catalog. Unusual feature of the booklet is that each of the main sections—industrial, commercial-residential, and troffers—is a complete catalog in itself and can be detached as a separate unit. Supplementary section provides practical guide on "How To Plan a Fluorescent Lighting Installation." Detailed descriptions, diagrams, charts on technical data, and specifications of every fixture are included.—Sylvania Electric Products, Inc., 87 Union St., Salem, Mass.

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READER COMMENT

Statistics Held Essential

Sir: Your editorial, "Dilemma in Education," deserves considerable attention from engineers and educators alike. It is to be hoped that the topic will be fully discussed and that concrete action will follow.

The writer is convinced of the necessity for a course in statistics in the undergraduate curriculum of all branches of engineering. He would make a place for it in the latter part of the junior year of the standard four-year curriculum at the expense of some of the design courses.

The content of the course in statistics needs close study. The course should ground the student in basic principles and provide him with a reasonable understanding of the limitations of experimental and statistical data. It should not become another course in Mathematics. Lastly, and of considerable importance, it should recognize the interests of the student and should appeal to it by utilizing problems of engineering significance.

A. A. K. Booth
Asst. Professor of Applied Mechanics
Rensselaer Polytechnic Institute
Troy, N. Y.

Sulfur-Compound Jointing

Sir: The laying of cast-iron pipe and the joint materials to be employed have always been of interest to the Engineering Profession. The American Water Works Association at present is giving consideration to specifications for the installation of cast-iron pipe, and therefore, the experience of municipalities, particularly with large-diameter pipe is pertinent.

The construction of a new water supply for Albany, New York, was undertaken about twenty years ago and the new sources required a supply conduit for a distance of about twenty miles. The pipe line is of cast-iron bell-and-spigot pipe which extends from the Alcove Dam to the Feura Bush filter plant (Section I); from the filter plant to the City of Albany (Section II); and through the City of Albany to the Loudonville Reservoir (Section III).

Sections I and II consist of 43,250 ft. and 33,100 ft. respectively of 48-in. cast-iron pipe. This contract was advertised with alternates permitting use use of pig lead or sulphur compound substitute joint materials. The contract price in 1929 for trenching and installing 76,350 ft. of 48-in. pipe, which the city supplied to the contractor, was $873,500 for jointing with pig lead and $793,500 with a sulphur compound material.

The city decided to employ the sulphur compound lead substitute and this type of joint was subsequently specified for Section III. This latter section, which extends through the City of Albany, consists of 20,000 ft. of 48-in. pipe and 5,000 ft. of 42-in. pipe.

When the conduit was constructed, the pipe was initially tested in 4,000-ft. increments. A final test for leakage was conducted when each complete section was constructed. In the preliminary incremental tests on 43,250 ft. of 48-in. pipe in Section I, the average leakage was 220 gallons per day per inch diameter per mile of pipe. On the final test, conducted at completion, the actual leakage had reduced to 89 gpd. on the same basis of measurement.

For Section II, preliminary tests on individual sections resulted in a leakage of 254 gpd. per inch diameter per mile of pipe, whereas, on the final test, which was conducted six months later, the leakage was only 17 gpd. on the same unit basis.

It was not practical to conduct tests in this manner for the 25,000 ft. of conduit through the city. However, pressure was maintained within the main as construction progressed and at the completion of Section III, the leakage on the final test was equivalent to 117 gpd. per inch diameter per mile of pipe.

In the construction of the supply conduit, particular attention was directed to the cleaning of the bells and spigots of each pipe section prior to placing in the excavated trench and the braided hemp was properly rammed to the base of the bell. The pouring of each joint was deferred until the successive pipe section was in place, for the purpose of eliminating possible damage caused by shock or vibration to completed joints.

Shortly after construction was started, decision was made to backfill the trench immediately to a depth of one to two feet over the top of the pipe, to safeguard the completed conduit against extreme temperature changes. These precautions, combined with good workmanship, are in our opinion, responsible for the excellent results on final leakage tests and also account for the small number of defective joints that developed during construction and after the conduit was placed in service. In testing the entire 15 miles of Sections I and II, only two joints failed completely and a third joint was displaced for a length of about 18 in. The complete failures were attributable to the movement of testing plugs, which were not properly braced. The third joint was located in a wet trench where the installation was made during the winter season.

The twenty-mile Albany supply conduit was placed in service in Dec. 1932 and continuous records of maintenance are available for a period of sixteen years through the year 1948. Although this pipe line contains about 9,000 joints of a sulphur compound lead substitute material, it has only been necessary throughout this period to repair 15 faulty joints and to replace 11 cracked sections for cast-iron pipe. Of this number, 40 percent have been located in a section known as "Tivoli Hollow" which is a marshy area extending northerly from the City of Albany for a distance of about one-quarter of a mile. The following is a summary of these replacements for each year:

Year	*Cracked Pipe Replacement*	*Faulty Joints*
1933	0	0
1934	1	0
1935	1	0
1936	0	0
1937	0	1
1938	0	0
1939	1	1
1940	0	1
1941	0	0
1942	2	0
1943	0	1
1944	2	5
1945	1	1
1946	0	2
1947	2	0
1948	1	3

In some instances, joint repairs have been made by caulking a wedge of sheet lead into the faulty annular space and applying a leak clamp over the joint, without the necessity of removing pressure from the line.

Replacement of cast-iron pipe sections is usually made in 15 to 20 hr. and recently, a joint was repaired within a period of 7 hr.

For the past twenty years, all extensions to the distribution system in Albany, consisting principally of 6 to 12-in. bell-and-spigot cast-iron pipe have been made with sulphur compound joint materials. These extensions constitute 87 miles of mains in a distribution system which contains 267 miles of cast-iron pipe. Since 31 percent of the water services are unmetered, it is not possible to make an accurate determination of unaccounted-for water, due to leakage.

Benjamin L. Smith,
Consulting Engineer
Albany, N. Y.

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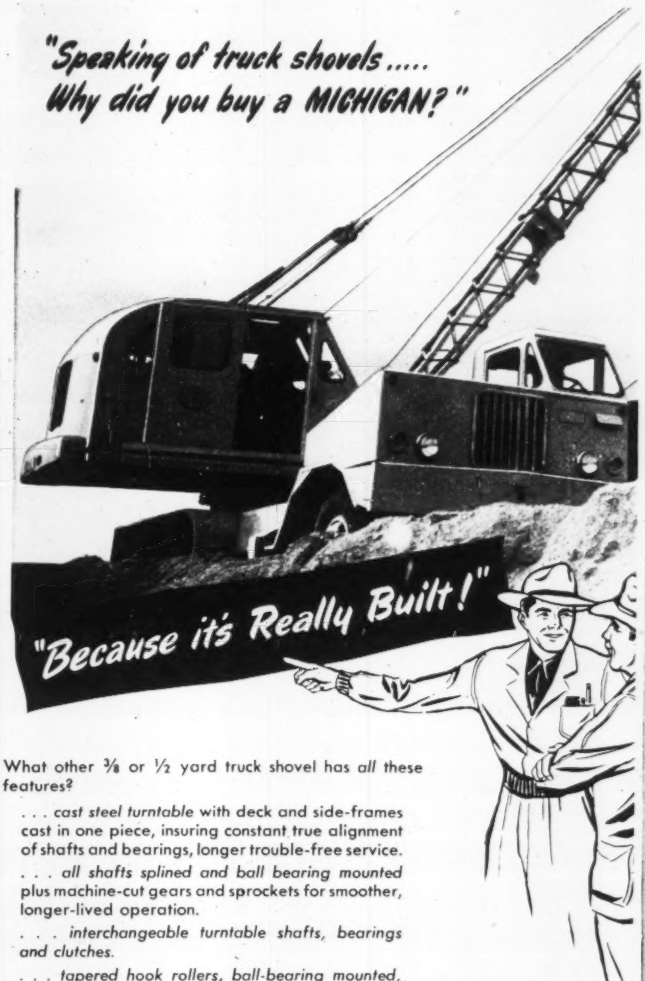
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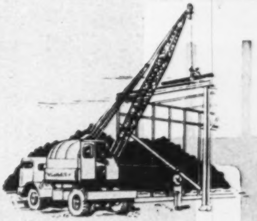

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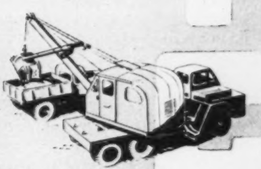

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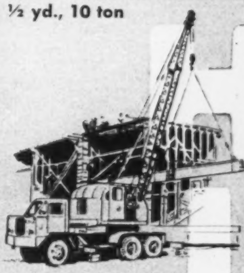

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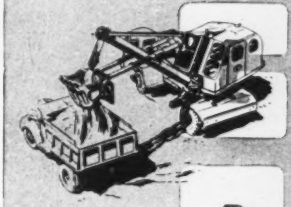

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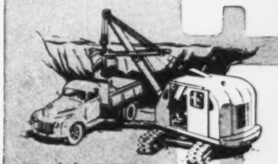

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